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THE UNIVERSITY OF ALBERTA

THE EFFECTIVENESS OF THE DECISION-MAKING PROCESSES IN
INDUSTRIES AND EDUCATIONAL SYSTEMS

BY



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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled "The Effectiveness of the Decision-Making Processes in Industry and Education", submitted by Douglas Frederick Jones in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

In order that society's institutions be ready for change, decision-making structures of a degree of complexity, known but not yet generally attained, must be utilized. Education has evolved into a large scale organization. The purpose of the study reported here was to determine:

1. Is it possible to determine the types and techniques of decision-making processes used in industry and education.
2. Is it possible to determine the effectiveness of the decision-making processes of educational and industrial organizations?

The study reported here, examined the decision-making activities of industry and education. A questionnaire paralleling the cells on Simon's decision-making model was prepared and administered to executives at four levels, in two industries and educational systems in Alberta. The results of the survey were described in a table to facilitate an understanding of the differences noted.

An effectiveness questionnaire, prepared by Georgopoulos and Tannenbaum was used to determine the attitudes of personnel, who had positions of no authority. The questionnaire was administered to ten people in each of the four organizations.

The findings from the decision-making questionnaire showed that industry had incorporated techniques, which were both traditional and modern. Education had incorporated traditional techniques but

were not using modern techniques to the same extent as industry.

Results of the effectiveness questionnaire showed that of 139 variables, 18 showed statistical significance at the .05 level, when tested with the Mann-Whitney U statistic. Medians were derived from the effectiveness instrument from which was created a Measure of Congruity. The responses indicated that the persons from industry and education were in agreement with the structures in which they operated.

The results of the study were encouraging in that they gave evidence of the ability to apply a theory of decision-making to practical situations. The instrument used to measure effectiveness requires refinement. The study suggested that further research should be undertaken after refinement of the selection techniques of the organization to be studied, so that generalization about decision-making techniques can be made.

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CHAPTER I

INTRODUCTION

Factors which enable the process of change to take place have always been present within society. The utilization of the "ability to adjust to change has long been recognized as a test of vitality and strength" (Dykes, 1964, pp. 155-6). In order that society's institutions be ready for change, decision-making processes of a degree of subtlety and complexity, known but not yet generally attained, must be utilized. "The more complex a structure is, the more complex are the decisions that can occur in it" (Deising, 1962, p. 243). In society there are many large scale organizations of private and public nature which have been involved with the continuing problem of how to deal with change.

Education has evolved into a large scale organization. Growth problems similar to those of large scale organizations (such as major oil companies and manufacturers) confront education. The educator, whose systems are burgeoning around him, is interested that his methods of decision and the decision tools he is using permit change as rapidly as is optimal. That is, does the provision for change in a school system enable that system to keep pace with surrounding industry or is it, in fact, moving at a different pace?

The literature contains many references to the decision-making processes used in industry. The literature also contains many references to the decision-making processes used in education. The literature does

not contain research reports which have reviewed and analyzed decision-making processes used in the two settings for purposes of comparison.

Purpose of the Study

The purpose of the study reported here was to determine the effectiveness of the decision-making processes used in selected industries and educational systems in Alberta. Criteria, to be discussed later, were selected which permitted the comparison of the organizations, education and industry, in an attempt to determine whether advantages held by one type of organization might be accrued by the other. In order to accomplish the above purpose the study investigated the following problems:

1. Is it possible to determine the types and techniques of decision-making processes used in industry and education?
2. Is it possible to determine the effectiveness of the decision-making processes of educational and industrial organizations?

Need for the Study

Improving decision-making processes in industry and education is dependent, in large part, upon review and analysis of decision-making processes in use. If there are innovations to be discovered from the present implementation of decisions, or if procedures are being used that would be of benefit to other organizations, then it is reasonable to assume that a study which identifies and compares existing practices in disparate organizations would assist in bringing these innovations and procedures to light. A study of greater proportion,

therefore, could have its origin from a study of the nature undertaken here.

Various authors have described change today as being not simply arithmetic or geometric in its proportion but rather "in the world today change is exponential" (Ziel, 1965, p. vii). It is a fact that today much more money than ever before is being allocated to research development. With research development funds being allocated most often toward the advancement of technology a need has developed for advanced organizational structures to meet the pressures of improved technology. Being large scale will mean that many organizations have diverse interests and changing values.

In addition, organizations have many different needs, which as they become apparent, necessitate a review of goals. Consequently a review of goals requires that changes be made where apparent and necessary. "There is an acknowledged accelerating rate of change foreseeable in how decisions are made" (Deising, 1962). . . which may soon affect our large scale organizations. The speed with which change can be made may depend upon the nature of the administrative structure of the organization.

One of the methods by which improvements in practice develop in any area of organization is through a critical analysis of those areas. In the study reported here, the most immediate problem was to investigate for a method or methods, used by both industry and education which could become a common basis for study. In order to determine a common basis for study the organizations were investigated for similarities and dissimilarities. Both are bureaucratic and within

the organization continue to strive to be successful. Both have concerns either with being efficient or with the measurement of efficiency. Both require decision-making processes that function well.

There are also differences between industry and education. Industry is profit-oriented, while education is not. In the past industry has used ways to measure efficiency, e.g. time-motion studies, while education generally has not. Industry has been able to measure the success enjoyed by its product through a return on investment, education cannot easily measure the success of its product. Management in industry is normally composed of individuals who are professionals in that field. Management in education is performed by an elected school board whose membership has not usually been composed of professional educators. The wishes of the school board are carried out by the administration, usually men who are professional educators. The administrator normally has authority as well as responsibility to conduct the daily operation of the school system.

It was considered important, therefore, that a study be conducted which examined both industry and education with the view in mind to extract factors of decision-making which conceivably would be useful to each of them.

Definitions

The study reported here generally followed the suggestions of Simon (1960) to aid in an investigation of decision-making procedures.

The following terms are unique with Simon in that they describe techniques of decision-making for which Simon (1960, p. 8) has given a meaning. The terms defined in this study were used in a questionnaire

which will be described later in the study.

Programmed Decision-making--repetitive and routine decisions.

- (a) Standard Operating Procedure--means for indoctrination of new members into habitual patterns of organizational behavior.

Non-programmed Decision-making--novel, unstructured, consequential decisions.

The section of this report which deals with effectiveness used the definitions forwarded by Etzioni. These definitions were not originally defined by Etzioni (1964, p. 16), however, they are mentioned in order to familiarize the reader with the specific information sought by the investigator.

Effectiveness--the degree to which an organization realizes its goals.

- (a) Effectiveness can be examined in two ways; through its use as a goal model and through its use as a system model.
 - i) Goal Model--success as a complete or at least substantial realization of the goal (Etzioni, 1964, p. 16).
 - ii) System Model--explicitly recognizes that the organization solves certain problems other than those directly involved with the achievement of the goal (Etzioni, 1964, p. 17).
 - that excessive concern with the goal may result in insufficient attention to other necessary organizational activities, and thus to a lack of coordination

between the inflated goal activities and de-emphasized non-goal activities (Etzioni, 1964, p. 17).

Procedure of the Study

The decision-making model prepared by Simon was selected as the basis for analyzing decision-making activities used in industry and education. An explanation of the model follows.

Simon (1960, p. 6) described decisions as being of two types, programmed and non-programmed and that these decisions may be arrived at by either using traditional techniques or modern techniques. The model Simon developed appears on the following page.

Simon (1960, p.) indicated in his model that any organization using traditional methods for solving programmed decisions will have developed in its employees certain habits indigenous to that organization, for example a clerical routine with standard operating procedures that must be followed. In addition, the organization will have developed within its structure common expectations among employees, a structure of subgoals for all to follow. In order that the structure work well the organization must have, in addition, a well-defined set of information channels.

Modern techniques for programmed decision-making include an operations research program that uses a computer. Simon indicated that the computer aids in mathematical analyses of alternatives for decision, and uses simulation to test alternatives before a decision is reached. Electronic data processing aids the whole decision process through its ability to speed up information.

TYPES OF DECISION-MAKING TECHNIQUES

PROGRAMMED	TRADITIONAL	MODERN
<p>1. Routine Repetitive Decisions.</p> <p>(a) The organization processes for handling programmed decisions.</p>	<p>1. Habit</p> <p>2. Clerical, routine, standard operating procedure.</p> <p>3. Organization structure develops:</p> <p>(a) Common expectations.</p> <p>(b) System of subgoals.</p> <p>(c) Well defined information channels.</p>	<p>1. Operations research.</p> <p>(a) Mathematical analyses.</p> <p>(b) Computer simulation.</p> <p>(c) Electronic data Processing.</p>
NON-PROGRAMMED	TRADITIONAL	MODERN
<p>1. One shot, ill-structured policy decisions handled by general problem-solving processes.</p>	<p>1. Use of judgment, intuition and creativity.</p> <p>2. Rules of Thumb.</p> <p>3. Selection and training of executives.</p>	<p>1. Heuristic* problem-solving applied to:</p> <p>(a) Training human decision-makers.</p> <p>(b) Constructing heuristic* computer programs.</p>

*Heuristic--serving to guide, discover or reveal, but incapable of proof.

Simon noted non-programmed decision-making is usually conducted by top-level executives who must make one-shot ill-structured decisions for which there are no standard procedures already developed. Traditionally, these decisions are handled by people who can make good judgments, have good intuition, and creativity. These people may tend to use a Rule of Thumb, developed corporatively or by themselves. Traditionally the organization has a means whereby prospective executives are selected and trained.

Modern non-programmed techniques include use of the computer to aid in the pursuit of knowledge by observation and experimentation. According to Simon, to do this the computer is used to train human decision-makers, enabling people to more logically approach and solve a problem. Further to this the computer takes on the role of problem-solver itself by constructing its own heuristic computer programs.

In order to obtain a measure of the techniques for both industry and education two organizations of industry and two organizations of education were analyzed. Specifically, the industrial representative organizations analyzed and compared were the Hudson's Bay Oil and Gas Company and the Pacific Petroleum Company, both of Calgary; while the educational organizations were represented by the Edmonton and Calgary Public School Boards. The industries were chosen because they had a reasonable return on investment, and were shown to be successful. The education organizations were chosen for their size and for the factor that such magnitude as they had would lead to the need for a computer which both organizations had in fact ordered.

Two questionnaires were used to collect responses. One of the questionnaires (based on Simon's decision-making model) was designed as a structured personal interview and was administered to four levels of management.

The second questionnaire was the organization effectiveness measure, as taken from Georgopoulos and Tannenbaum (1957). The effectiveness questionnaire was used with line personnel who were not in administrative or management positions of any sort.

Table I on the following page shows the people the study surveyed.

The responses to both questionnaires were treated as confidential.

On receipt of the questionnaires a comparison was made of management responses to line responses in an attempt to determine congruity. Management decision techniques in industry were compared to the techniques in education. The line perception of effectiveness in industry was compared to the perception of effectiveness as seen by the same level of personnel in education.

Delimitations of the Study

1. That the two industries selected (both process industries) would not be unlike other similar organizations.
2. That the school systems selected for use were the largest in Alberta and the schools selected within the system had educational programs which provided matriculation programs, technical programs and vocational programs.
3. That the relationships between line and management in the process industries selected were not atypical of that type of organization and similarly the same relationships in

TABLE I

DELINEATION OF PERSONNEL SURVEYED WITH
DECISION-MAKING QUESTIONNAIRES

SOURCE OF QUESTIONNAIRE	PEOPLE SURVEYED INDUSTRY	PEOPLE SURVEYED EDUCATION
1. Simon's Decision-Making Model	Hudson's Bay Oil and Gas 1. Exploration General Manager 2. District Manager 3. Field Superintendent 4. Supervisor	Edmonton 1. Assistant Superintendent of Secondary Schools 2. Principal 3. Assistant Principal 4. Department Head
	Pacific Petroleum 1. General Manager 2. Manager, Exploration 3. District Geophysicist 4. Supervisor	Calgary 1. Superintendent of Secondary Schools 2. Principal 3. Assistant Principal 4. Department Head
2. Georgopoulos Tannenbaum Effectiveness Survey	Hudson's Bay Oil and Gas 10 questionnaires given to line employees with no management responsibilities.	Edmonton Harry Ainlay School--10 questionnaires given to teachers who were line employees with no administrative responsibilities.
	Pacific Petroleum 10 questionnaires given to line employees with no management responsibilities.	Calgary Ernest Manning School--10 questionnaires given to teachers who were line employees with no administrative responsibilities.

the schools selected were not atypical of that type of school.

4. That the comparison of Line Personnel in industry with the Teacher in education were parallel comparisons.
5. That the responses to the questionnaire were valid.

Summary

The problem of rapid change in our society especially as it effected large-scale organizations, was presented in the Introduction to the study. The purpose of the study, to determine the effectiveness of the decision-making processes used in selected industries and educational systems in Alberta, was discussed. The need for the study was presented as a need to review and analyze in order to discover innovations which may be used to improve the decision-making processes in education and industry. The similarities and dissimilarities of the two groups to be investigated were discussed and noted. Definitions unique to the study were noted. The procedure to be followed in the study was outlined in some detail with special attention given to a decision model by Simon in which the types and techniques of decision are placed. Included was an overview of the people who participated in the study. Those defined were Senior Management in industry and Administration in education, who answered the decision-making questionnaire, and line employees from both industry and education who answered the effectiveness questionnaire. The following chapter will review literature related to the study.

CHAPTER II

RELATED LITERATURE

Numerous volumes of literature have appeared which have dealt with decision-making, and to a slightly lesser extent there is literature which reviews effectiveness. There are also in the literature, studies in which the authors investigated the effectiveness as a part of the decision-making process. A number of authors attempted (in writing their doctoral dissertations) to examine certain aspects of the decision-making process, however, none were exactly related to the subject which this study has undertaken. Either an author selected as his topic how decision-making was done (Lee, 1964) or had written regarding some factor as it had affected the decision-makers (Miller, 1964). Miller (1964) examined environmental factors while Mordka (1964) examined the "Effects of Communications Disruption on the Decision-Making Processes of Hierarchically Structured Groups". None of the studies reviewed examined the effectiveness of the decision-making process. A number of studies and texts pointed out the complexity of the decision-making process and the need for making it effective. Two very notable studies were conducted which studied organizational effectiveness.

Effectiveness Studies

Tannenbaum, Weschler and Massarik (1961, p. 325) pointed out that the "difficulty encountered in the formulation of a valid reliable criteria of effectiveness in a research and development setting

is particularly complex and raises a number of questions." The solution for them was to produce a sociometric survey seeking two factors. The two factors were:

1. To indicate level of job satisfaction, the work group and their perception of the level of productivity and of morale.
2. To specify choices for leaders in research; administration.

The study by Tannenbaum et al led to a Multi-Relational Sociometric Survey, which was concerned with the measurement of interpersonal variables associated with organizational effectiveness. The factors measured were:

1. Goal-directed people as contrasted with non-goal directed.
2. Goal-directed relations--prescribed, perceived, actual, desired, and rejected (1961, p. 347).

A study similar to that of Tannenbaum et al was done by Georgopoulos and Tannenbaum in which they noted that "difficulties arise with attempts to define the concept of effectiveness adequately" (Georgopoulos and Tannenbaum, 1957, p. 534). From their position it was preferable to look at the concept of organizational effectiveness from the point of view of the system itself. A definition of organizational effectiveness, for them, was to take into consideration two aspects: "(1) the objectives of the organizations and (2) the means through which they sustain themselves and obtain their objectives" (p. 535). They regarded the most common objectives as:

1. High output in the sense of achieving the end result for which the organization is designed whether quantitatively or qualitatively.
2. Ability to absorb and assimilate relevant endogenous and exogenous change.
3. The preservation of organizational resources of human and material facilities (p. 535).

From the previously mentioned objectives Georgopoulos and Tannenbaum defined organization effectiveness as:

the extent to which an organization as a social system, given certain resources and means, fulfills its objectives without incapacitating its means and resources and without placing undue strain upon its members (1957, p. 535).

Georgopoulos and Tannenbaum concluded that the above definition, subsumed the following general criteria, to be studied:

1. organizational productivity;
2. organizational flexibility in the form of successful adaptation to externally induced change;
3. absence of intraorganizational strain or tension, and of conflict between organizational sub-groups.

Of the two studied mentioned the latter done by Tannenbaum and Georgopoulos was selected to aid in the investigation reported here. In the literature surveyed, there were comments regarding effectiveness which supported the use of the Georgopoulos, Tannenbaum survey. Simon (1947) defined effectiveness as "the degree to which an organization seemed to indicate the possibility of examining goal attainment. Stothers indicated that effectiveness depended "not only on the

motivation of employees but also on the technical nature of the processes and on the decision-making and communications efficiency of the organizational structure" (Leavitt, 1963, p. 79). If there is intra-organization strain evident, then "separated efforts must be recombined for organization-wide effectiveness" (McDonough and Garrett, 1962, p. 192). Flexibility is also a very important factor, as considered, for the

greater the variety of presented facts, values, norms and the greater the variety of proposed alternatives a structure is able to produce the more effective its decisions are likely to be (Deising, 1963, p. 175).

Examination of flexibility and intraorganizational strain also tended to indicate if the organization was rational. Likert (1961, p. 104) suggested

management will make full use of the potential capacities of the human resources only when each person in an organization is a member of one or more effectively functioning work groups that have a high degree of group loyalty, effective skills of interaction and high performance goals.

Other authors had indicated a need to examine organizational goals. Thompson and McEwan (Etzioni, 1961, p. 178) said that the "major goal of the operating division is to respond flexibly and effectively to a changing environment", and Deising (1962, p. 243) said that "organizations are social units oriented toward the pursuit of specific goals". Einsenstadt (Etzioni, 1961, p. 284) said that goals "constitute one of the most important connecting links between the given organization and the total structure in which it is placed".

The goal would also appear to be a connecting link between the effectiveness of an organization and its decision-making structure.

Without a goal there would appear to be no need for a decision-making structure, for the decision-making process "controls the utilization of resources of the system as a whole in the interest of the goal" (Etzioni, 1961, p. 40).

It was noted by Deising (1962, p. 20) that some organizations have, as in education a roughly defined goal "which can only with great difficulty be assimilated to the category of efficient action". When that is the situation, and as goals call for

increasingly intangible difficult-to-measure products, society finds it more difficult to determine and reflect its acceptability of that product, and that signals that indicate unacceptable goals are less effective and longer in coming" (Thompson and McEwan p. 179, Etzioni).

Where goals are difficult to measure there would seem to be a need for an especially well-functioning decision-making structure. Such a need is made evident if Thompson and McEwan are correct because if disapproval was slow in coming the organization could founder without really becoming aware.

Any structure must struggle to remain rational and only will as long as there are mechanisms which enable change to take place. Deising (1962, p. 82) warned though, that "if in equilibrium the structure is resistant to change . . . and there is always a trend toward equilibrium in a system". If the decision structure does not function well and change is not forthcoming then "what happens in extreme cases is that a highly integrated social system remains unchanged but people desert it and take on a new social system" (Deising, 1962, p. 85). That the decision-makers must be aware and possessed of good decision structure is evident in that "even orderly

change is tension-producing if for no other reason than the constant adjustment it requires" (Moore, 1962, p. 192). Work groups will function better when there is an "adequate provision for inventing and checking information, adequate provision for inventing and checking suggestions, and adequate procedure for combining suggestions in decision" (Deising, 1962, p. 243). Just such a system Deising described as being rational.

Decision-making Studies

The literature on decision-making structures is not scarce. Blake and Mouton (1961), Barnard and Weber (Etzioni, 1961), discussed structures involving only human resources, while Van Neumann and Morgenstern (1964) spoke of technological aids which would or could eliminate the human factor almost entirely. The different philosophies seemed to fall into three distinct categories which would show man-man, man-machine, machine only relationships in the decision-making process. In order to ascertain and appreciate the philosophies regarding decision-making three philosophies have been examined for the purpose of comparison with Simon's decision-making model. This was done to help clarify and explain the use of Simon's model for the study reported here. Simon in his early thinking, and following the work of Barnard and Weber (1961, p. 94-95), regarded the decision-making structure as:

1. Discussion relationships.
2. Set of beliefs and values, more or less held in common by participating members.
3. Definition of ideas:
 - (a) Beliefs--factual propositions acceptable to the group.

(b) Values--goals acceptable to the group.

4. Problem-Solving

(a) The participants assume they share relevant goals and criteria.

(b) Take a course of action through joint examination.

(c) Assemble information.

(d) Make predictions.

(e) Give and weigh suggestions.

(f) Continue until everyone is satisfied.

Leavitt: The Rationality Model in Decision-Making

Leavitt offered his rationality model in decision-making:

1. More information is needed to make good decisions in a period of rapid change and uncertain values, but it is also essential to have an operative structure of decision rules tying together the ultimate objectives of the organization with the choices which further the objectives (Leavitt, 1963, p. 95).

2. Using matrices to show the probabilities of all relevant future occurrences and the ends resulting from the combined effects of each possible strategy on the one hand and the relevant future occurrences on the other.

3. Decision Rule #1 Choose the dominant strategy.

Decision Rule #2 Choose that which meets all standards (full satisficing^{*}).

* Satisficing--looks for a course of action, which is not the best alternative from among all those available to him, but one which is satisfactory or good enough.

#2b Choose the strategy which is superior
in the most important value measure
subject to the restriction that it meets
minimum standards in the other measure
(modified satisficing).

Decision Rule #3 Choose the strategy with maximum (weighted)
combined value measure (Leavitt, 1963, p. 95).

Bross: Decision-Making Model

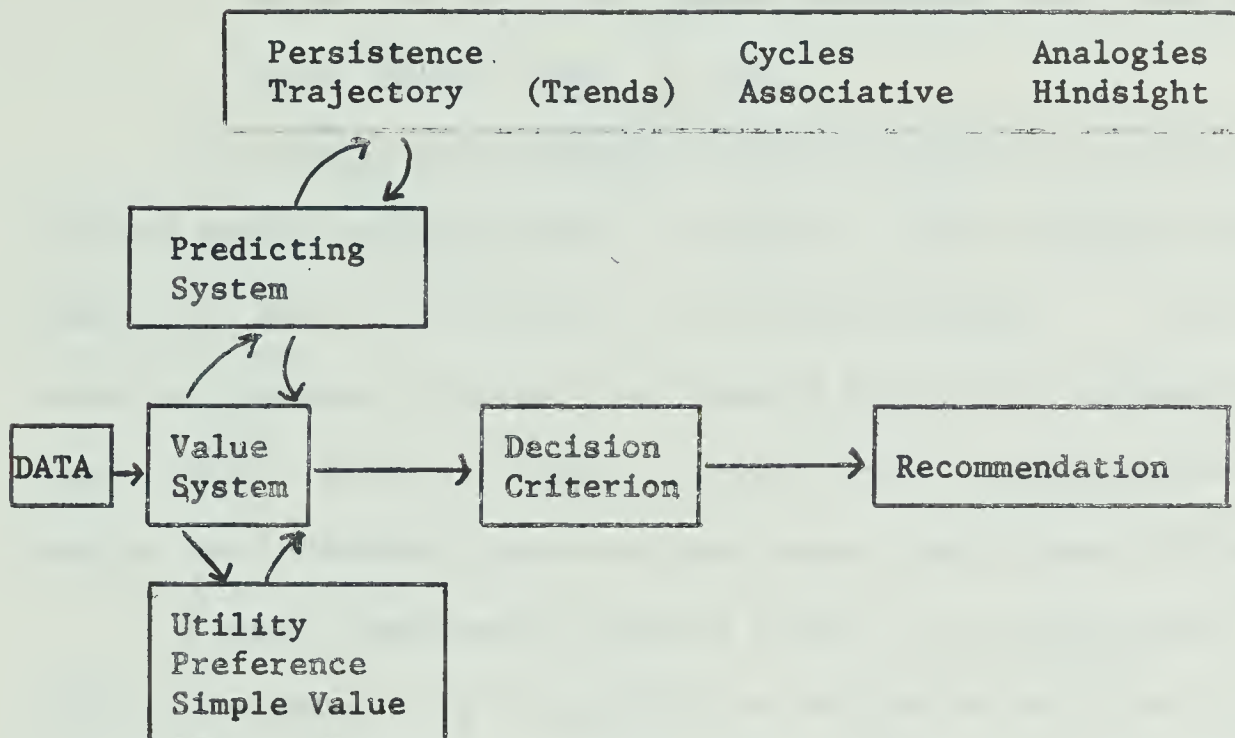
Decision requires the selection of a course of action. The raw material of this process (being information), must be processable, accurate, enabling the handling of complex relationships, flexible and have a potential for codification to standard rules.

Bross (1953) indicated that there were three basic steps in any decision:

1. The outcomes for each action are predicted.
2. The outcomes are evaluated in terms of some scale of desirability.
3. A criterion for decision based on the purposes is then used to make the actual selection.

The above steps can be complicated in two ways:

- i) through conflicting values
- ii) through a differing value system.



C. I. Barnard: Decision-Making in Organization

Barnard, in contrast to Leavitt and Bross, did not indicate that technological aids were useful in decision-making. Aids were not available. It should be noted though that Barnard advocated training and experience as being of considerable help in improving the decision-maker. Barnard indicated too that decision-making tends to be an art. His point of view is expressed as follows:

1. "The capacity of most men to make decisions is quite narrow, although it is a capacity that may be considerably developed by training and especially by experience" (Dubin, 1961, p. 320).
2. "The fine art of executive decision consists in not deciding questions that are not now pertinent; in not deciding prematurely, in not making decisions that cannot be made

effective and in not making decisions that others should make" (Dubin, 1961, p. 321).

Few studies were reported which were based on the work of the decision models mentioned above. Anderson (1961) concluded from a study that "partly as a result of diffused authority . . . and poor reporting the lower officials and general public are confused and demoralized". Anderson's study involved civil servants and did not seem to have followed a decision model which would ensure effectiveness.

A study conducted by Smittle (1962) on an educational structure asked the question, "Is it possible to categorize decisions according to types that are meaningful for research purposes?" The study indicated this was possible and concluded by using a decision-model similar to those shown previously.

There was not a precedent, however, for involving teachers in a decision structure. A recent study by Dykes (1964, pp. 155-6) indicated that "the move to give teachers a greater voice in educational affairs bodes well to alter the traditional pattern of decision-making", and concluding, he said that "traditionally teachers have had little choice in educational decision". Apropos of this lack, Ducker stated that "administrators should not be left alone" (1965, p. 195).

Macy (Gulick, 1962, p. 9) stated the need for similar research into the decision-making procedure as was stated by Smittle above. He felt that "the administrator who is willing to state some assumptions, to utilize available data, and to apply modern mathematical techniques may set a reasonably accurate course for his organization to follow".

SUMMARY

The chapter has attempted to outline a survey of the literature related to the study reported here. Effectiveness studies by Tannenbaum, Weschler, and Massarik and by Tannenbaum AS, and Georgopoulos were contrasted. A further search of the literature revealed little research done on effectiveness in an organization. The chapter continued with a review of decision-making in organizational structures, and of three decision techniques stated by Leavitt, Bross and Barnard. Very little literature was devoted to the actual examination or comparison of structures. Comments were noted and examined which described the needs for research in this general area.

Chapter III will review in detail the procedures taken by the investigator in examining and contrasting the decision-making techniques and effectiveness of selected industries and educational systems in Alberta.

CHAPTER III

PROCEDURE OF THE STUDY

Very early in the study it became necessary to determine which industries and educational systems to select for analysis. The motive behind the survey was to examine successful operations in both cases in order that comparisons could be made of optimally operating systems. In this respect industry was selected through an investigation of return on investment. Examination of the Financial Post revealed that oil companies in Alberta were very successful by comparison with most other industries. As a result of the examination two oil companies were chosen viz. Hudson's Bay oil and Gas Company and Pacific Petroleum. Hudson's Bay Oil and Gas had grown from 300 to 850 employees over the last five years, had a clearly defined return on its investment, and had a computer installation of its own. Pacific Petroleum was similar to Hudson's Bay Oil and Gas. Pacific Petroleum had eight hundred employees, a well-developed organization, a computer installation though smaller than Hudson's Bay Oil and Gas, and was able to boast a similarly significant return on investment. Through a study of the employees, some of whom were in management; some of whom were in the bargaining unit or rather were in no supervisory position whatsoever, of the two industries it was hoped that the education processes utilized could be determined, analyzed, and compared.

The educational systems chosen for analysis and comparison were the public school systems of Calgary and Edmonton. Educational organizations the size of Edmonton and Calgary have the potential for

organization of a large magnitude, have the potential for using and have ordered computers. With the exception of a measurement criterion such as return on investment, the industrial and educational organizations selected for study both have capability of having clearly defined administrative structures.

Accordingly for the purposes of the study a questionnaire was used to interview the management¹ of industry and the administration² at similar levels. The questionnaire was conducted by the researcher in the presence of the intended interviewee who would respond to the question in his own way. The questionnaire was adapted from the decision model as prepared by Simon (1960) from which the researcher used questions which were designed to determine to what extent administration had progressed in their decision-techniques in any organization studied.

Because the study of the literature had revealed that innovators or reporters of decision-making principles often discussed the techniques from either a point of view not involving computers or else completely involving the computer, a study was sought which covered both aspects. Simon's model as described in Chapter I covered all phases of decision-making strategy from non-aided (technologically) decision-making through to simulation of human thought on computers. Because his model covered this wide range his model was used as a basis for the questionnaire intended to discover the decision-making techniques in the industries and educational systems to be examined.

¹Management refers to industry.

²Administration refers to education.

The model was examined and questions developed which indicated whether the responder was using any of the following techniques:

1. Programmed traditional decision-making, using habits, a clerical routine or standard operating procedures, and whether there were included in the structure, common expectations, and a system of sub-goals, which moved through well-defined information channels.
2. Programmed modern decision-making using traditional techniques with technological aids, incorporating electronic data processing, mathematical analysis, and computer simulation.
3. Non-programmed traditional decision-making using people who were creative, judgmental, intuitive, who could select a common denominator for use as a rule of thumb. A definite selection and training program for executives.
4. Non-programmed modern decision-making, provided for by training human decision-makers through use of a computer, or a system powerful enough to construct a heuristic computer program which enabled the computer to do the decision-making.

A questionnaire was developed (Appendix A) using Simon's model (1960, p. 8). The questionnaire was designed to measure whether or not the organization operated in the manner suggested by Simon and also whether they had progressed from traditional techniques toward more modern techniques of decision.

Some of the questions on the questionnaire were designed to determine whether the decision-making structure was human-relations oriented. Many authors (notably Likert and Lippinbaum, indicated positively that in order to have the individual involved in the work process his ideas must be considered when an operation involves change. "To be effective and communicate as intended a leader must always adapt his behavior to take into account the expectations, values and interpersonal skills of those with whom he is interacting" (Likert, 1961, p. 95).

The questionnaire was given to those levels of management and administration who would be involved continuously in decision-making and at some time be in a position to be reached by the working force. Chosen were: in industry--managers concerned directly with production; in education--those who were in what corresponded to the line in industry. These turned out to be:

(a) In industry--Hudson's Bay Oil and Gas

i) Production--Vice-President

--General Manager

--District Manager

ii) Employer Relations--Manager

iii) All of these people at the General Manager level or higher were also members of the Management Advisory Committee.

(b) In industry--Pacific Petroleum

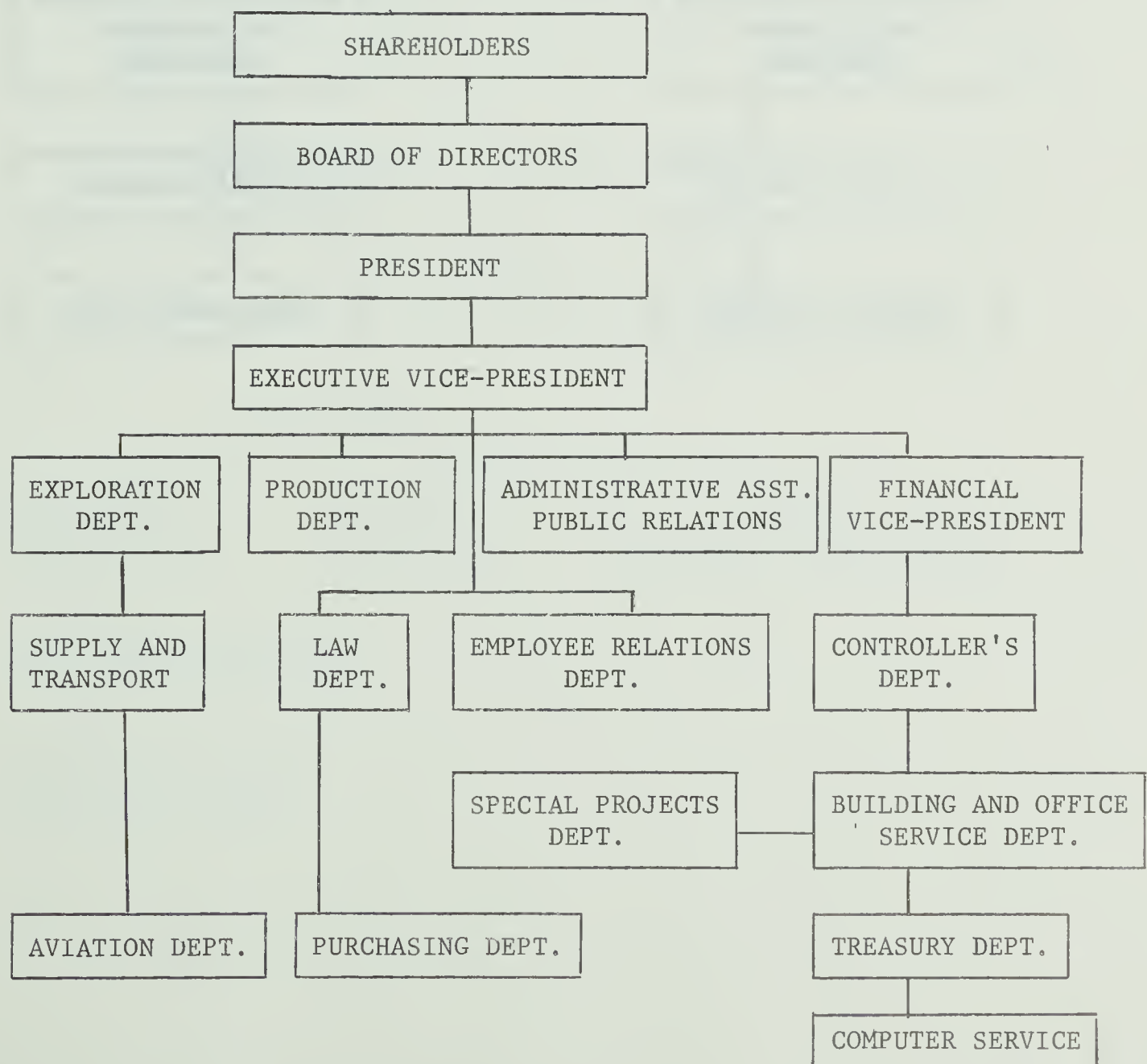
i) Production--Exploration--Vice-President

ii) Manager

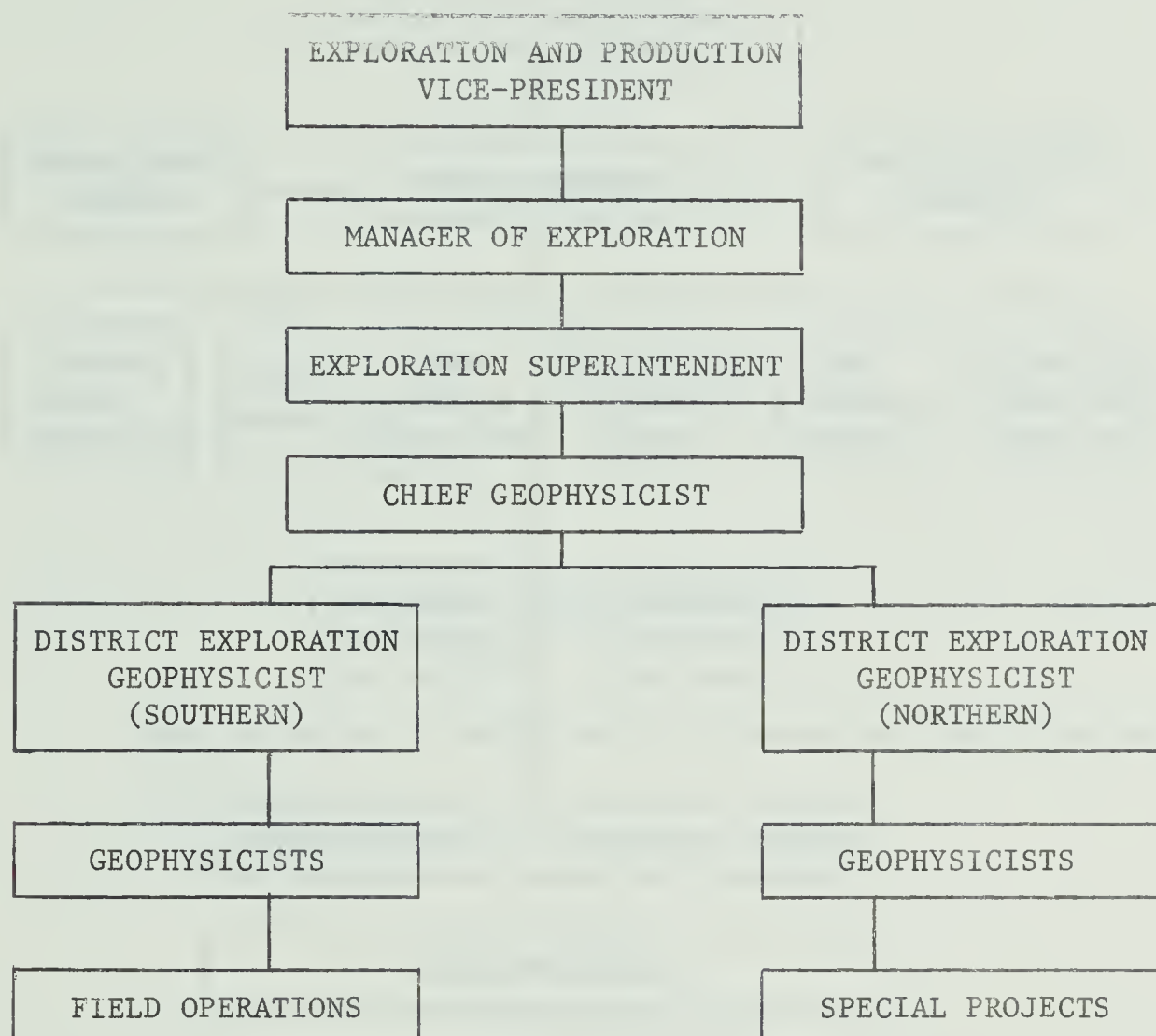
- iii) Chief Geophysicist
- iv) District Geophysicist
- (c) In education--Calgary and Edmonton
 - i) Superintendent of Secondary Schools
 - ii) Principal of Large High School
 - iii) Assistant Principal of Large High School
 - iv) Department Head

An organization chart of the structure investigated is as follows:

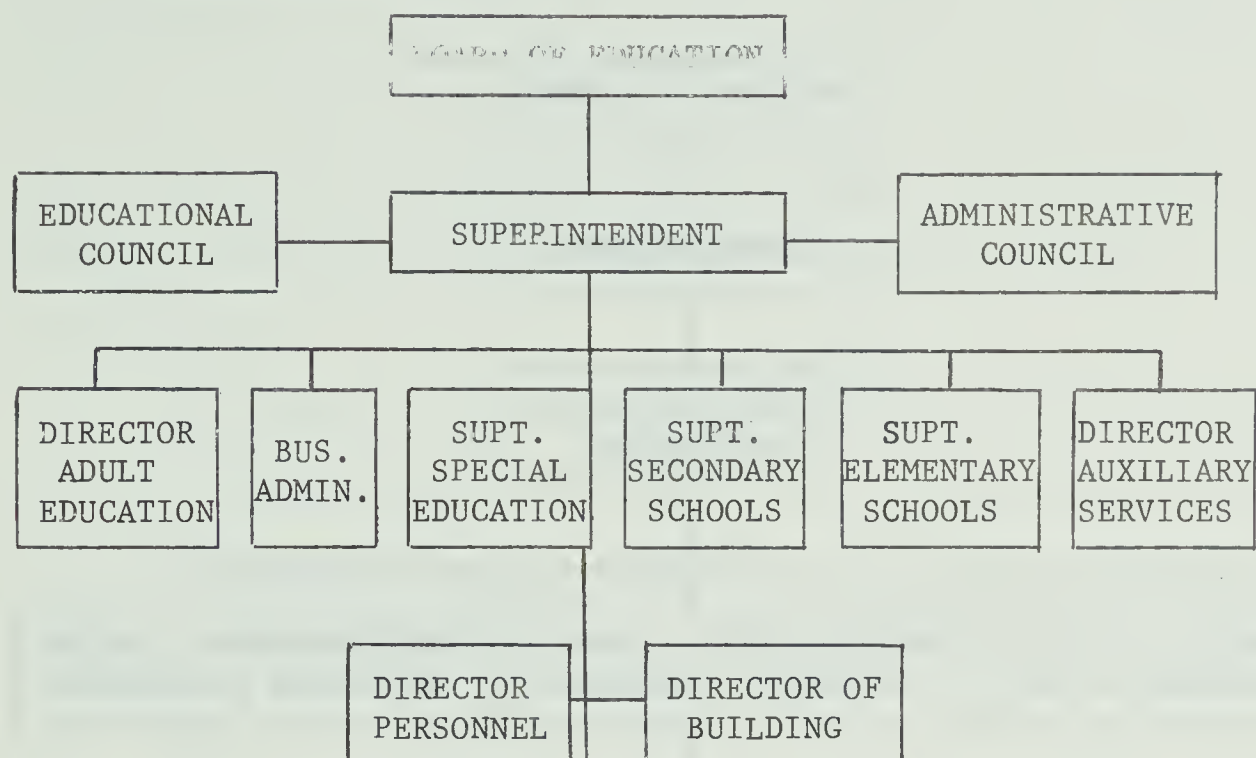
1. Hudson's Bay Oil and Gas



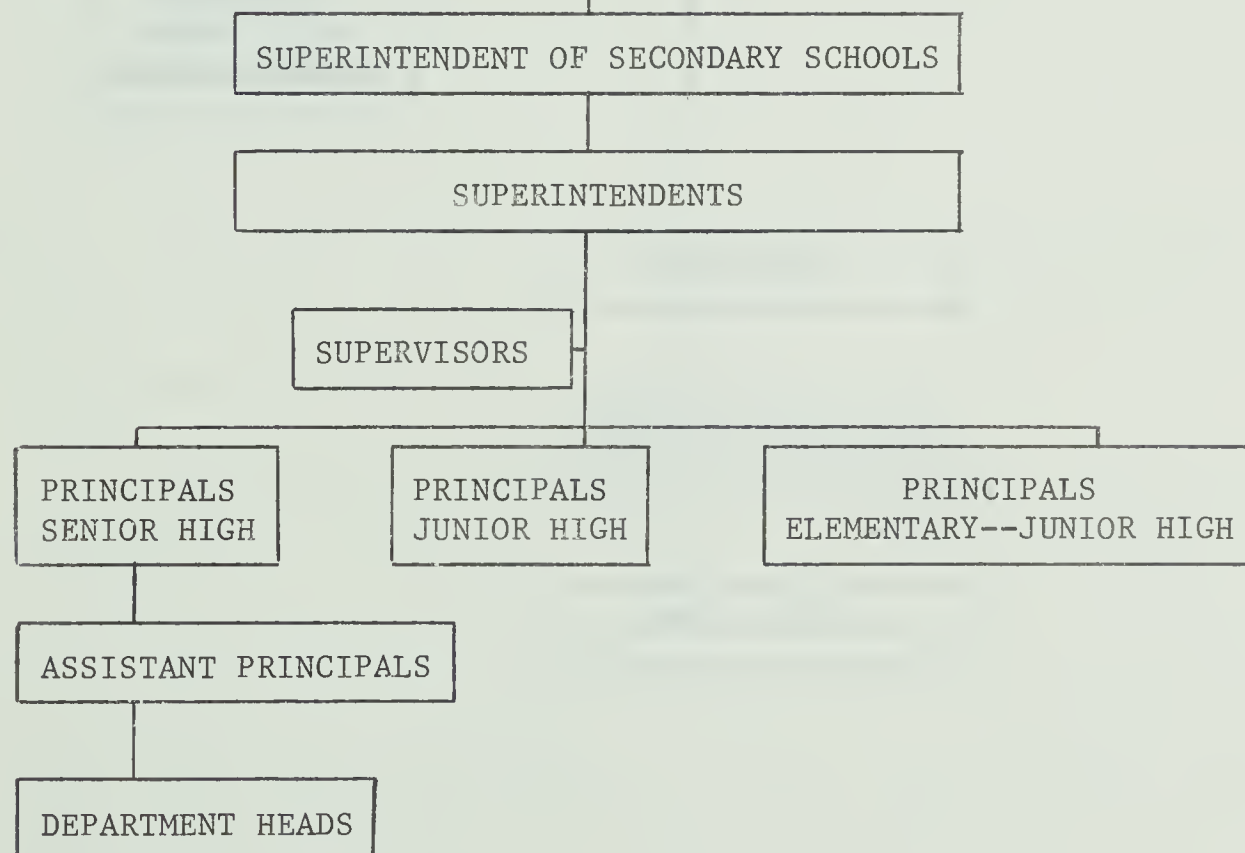
2. Pacific Petroleum



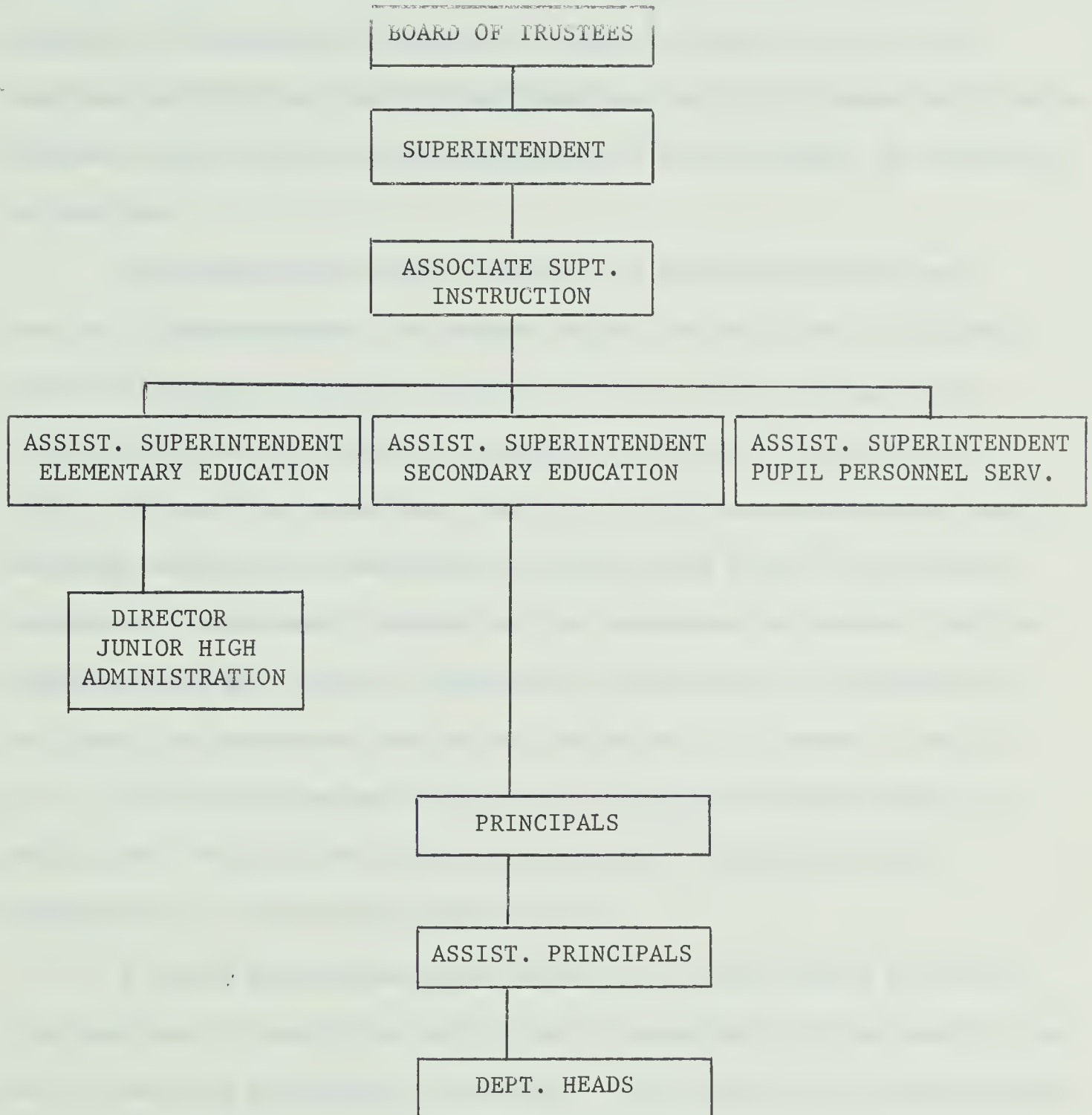
3. Calgary School Board



Then focussing directly on the line we get the following chart:



4. Edmonton School Board



The responses to the questionnaire asked of administration and management were recorded by the researcher in a face-to-face interview. This was done because the model by Simon from which the questions were derived needed interpretations to the different individuals. Care was taken to keep the administration of the instrument as consistent as possible.

The average time taken to answer the questionnaire was one hour and fifteen minutes, the longest taking two hours and the shortest forty-five minutes. It was noted that in some cases, generally with educators who had no computers there was a tendency to answer in the future. It was also noted that when some of the respondents were asked if decisions were made in committee, that they would reply "Do two people constitute a committee?" Generally, the impression was gained, that the respondent was not trying to impress the interviewer and was answering as closely as possible to the actual condition as it seemed to exist to him. All of the respondents were most cooperative and gave freely of their time. When received the information was charted for later interpretation in the study reported here.

A second questionnaire was prepared for those people who had a line function, in which they were directly concerned with the product, but who did not have a position of authority. The basis of this questionnaire was a similar one to that done by Georgopoulos and Tannenbaum in 1957. Their questionnaire was designed to measure organizational effectiveness. This research was based on the study of the organization from a system-model approach rather than goal-model. The goal-model approach defines success as a "complete or at least substantial realization of the

organization goal" (Etzioni, 1964, p. 16). The system-model recognizes that the organization solves certain problems other than those directly involved in the achievement of the goal.

The questionnaire prepared in this research was designed to study:

1. job satisfaction
2. intraorganizational strain, as indicated by tension and conflict
3. organizational flexibility

The responses received on the questionnaire were expected to reflect the attitude of those persons who were not in any administrative positions but who were carrying out the decisions of the superiors. In this case the respondent would simply check an answer which he felt most closely approximated his interpretation of what he considered to be the situation around him.

The questionnaire itself is divided into seven parts, each designed to investigate one specific aspect of the employees role in the structure. The parts are:

1. Some Things About Yourself.
 - (a) An effort will be made to determine the years of employment.
 - (b) The amount of money made.
 - (c) The kind of job they do.
 - (d) Age.
 - (e) The extent of the individual's ambition.

2. Your Job.
 - (a) Responsibility given.
 - (b) How much concern.
 - (c) Pressure.
 - (d) Agreement with other personnel.
 - (e) Wages and Promotions.
3. Supervision.
 - (a) Questions about superiors.
4. The People You Work With.
 - (a) Morale.
 - (b) Sense of belonging.
 - (c) Feelings and Ideas of People Worked With.
5. Communications.
6. Opinions and Beliefs.
7. Changes in the Firm.

The results of the questionnaire, once obtained, were expected give an overall picture of the employees role in the corporate structure. It was anticipated that by arriving at the medians of all answers a reasonably accurate picture could be visualized of the overall effectiveness that could be expected from each group.

The concept of organizational effectiveness was taken from a similar study by Georgopoulos and Tannenbaum in which a view is taken of the system itself "of the total organization in question rather than from parts of the larger society" (1957, p. 534).

The questionnaire was not changed in length except for some minor omissions, or in structure for the purposes of this study. There were changes made in the names used by the original designers of the questionnaire. Basically the changes were in the names given to the personnel to whom the questionnaire referred. Since it was to be administered to both industry and education both titles for those personnel had to be included.

The questionnaire was given to persons who had, where possible, five years of experience or more in their firm. These people were in line positions (in which the persons deal directly with the production of the product) of one nature or another. The questionnaire was delivered to them with instructions as to its nature and with an envelope, marked confidential, into which the questionnaire would be placed and mailed after it was completed.

When received, the effectiveness questionnaire was coded for key-punching and interpretation through use of the University of Alberta computer centre.

Summary

This chapter examined the following groups in order to determine whether the decision-making techniques had any bearing on the effectiveness of that structure. Examined were: From industry--Hudson's Bay Oil and Gas Company and Pacific Petroleum; from education--Calgary School Board and Edmonton School Board. The decision techniques used were determined by using a questionnaire that would place the decision-making techniques used by the administrators in accordance with the paradigm by Simon.

The effectiveness was examined and determined by a questionnaire. Taken from a study by Georgopoulos and Tannenbaum the questionnaire was given to members of the organization who were in no administrative post.

The results from the questionnaire were analyzed to determine if there was correlation which existed between decision-making techniques and effectiveness in any given structure.

CHAPTER IV

The study reported here used two questionnaires; one to determine the nature of the decision-making techniques of selected industries and selected educational institutions; the other to study the effectiveness of persons who had positions but no authority in the same selected industries and educational systems.

The first part of this chapter presents the results obtained from management and administration regarding their decision-making techniques. The second part of this chapter reports the results obtained from the effectiveness questionnaire.

One of the purposes of the study reported here was to determine the extent to which representatives of industry and of education made use of the techniques of decision-making described in Chapter II as explained by Simon. In Simon's estimation "the paradigm holds for all decision-making activity" (1960, p. 8).

Subjects of the study reported here were found to be in line positions generally, ranging in industry from Vice-President to Department Manager and in education from Superintendent to a school Department Head.

The items in the instrument were placed into the appropriate cells of Simon's paradigm. For example, items number 1, 4, 6, 7, 8, 10 and 15 were to determine if Programmed Traditional techniques were in use, and were therefore placed in the Programmed Traditional technique cell. Items numbered 14, 16, 17, 18, 19, 20 and 23 determined Programmed

Modern techniques and were placed in the Programmed Modern technique cell. Items numbered 2, 3, 5, 9, 11, 12 and 13 determined Non-programmed Traditional technique cell. Items numbered 21, 22, 25, 26 and 27 determined Non-programmed Modern techniques and were placed in the Non-programmed Modern technique cell. Simon's paradigm will be found in Chapter I, page 7.

Table II, on the following page, reveals the responses made by industry to the items placed in Simon's paradigm.

Table III, page 39, which is constructed in exactly the same manner as Table II, reveals the placement of responses made by education as before.

The data indicated the following:

1. Programmed traditional decision-making techniques.

(a) For industry of the 72 possible responses (8 persons x 9 questions) 58 responses indicated use of programmed traditional techniques, while 14 indicated non-use or non-awareness of use.

(b) For education of the 72 possible responses, 64 indicated use of programmed traditional techniques, while 8 responses indicated non-use or non-awareness of use.

2. Non-programmed traditional techniques.

(a) For industry of the 80 possible responses (8 subjects x 10 questions) 70 indicated use of this technique while 10 indicated non-use or non-awareness of use.

(b) For education of the 80 possible responses 50 indicated use of this technique, while 30 indicated non-use or

TABLE II

TECHNIQUES USED BY INDUSTRY

	Non-Use	Use
1. Programmed Traditional Techniques (72 items)	<div>(14)x</div> <div>100 90 80 70 60 50 40 30 20 10</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>	<div>x(58)</div> <div>10 20 30 40 50 60 70 80 90 100</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>
2. Non-programmed Traditional Techniques (80 items)	<div>(10)x</div> <div>100 90 80 70 60 50 40 30 20 10</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>	<div>x(70)</div> <div>10 20 30 40 50 60 70 80 90 100</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>
3. Programmed Modern Techniques (56 items)	<div>(7)x</div> <div>100 90 80 70 60 50 40 30 20 10</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>	<div>x(49)</div> <div>10 20 30 40 50 60 70 80 90 100</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>
4. Non-programmed Modern Techniques (64 items)	<div>(40)x</div> <div>100 90 80 70 60 50 40 30 20 10</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>	<div>x(24)</div> <div>10 20 30 40 50 60 70 80 90 100</div> <div>↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</div>

Note: There were 8 subjects (4 from each industry to answer, as in Part 1, 9 items therefore giving a total of 72 items indicating use or non-use of the techniques.

TABLE III

TECHNIQUES USED BY EDUCATION

	Non-Use	Use
1. Programmed Traditional Techniques (72 items)	<p>(8)x</p> <p>100 90 80 70 60 50 40 30 20 10</p> <p>10 20 30 40 50 60 70 80 90 100</p>	<p>x(64)</p> <p>10 20 30 40 50 60 70 80 90 100</p>
2. Non-programmed Traditional Techniques (80 items)	<p>(30)x</p> <p>100 90 80 70 60 50 40 30 20 10</p> <p>10 20 30 40 50 60 70 80 90 100</p>	<p>x(50)</p> <p>10 20 30 40 50 60 70 80 90 100</p>
3. Programmed Modern Techniques (56 items)	<p>(35)x</p> <p>100 90 80 70 60 50 40 30 20 10</p> <p>10 20 30 40 50 60 70 80 90 100</p>	<p>x(21)</p> <p>10 20 30 40 50 60 70 80 90 100</p>
4. Non-programmed Modern Techniques (64 items)	<p>(51)x</p> <p>100 90 80 70 60 50 40 30 20 10</p> <p>10 20 30 40 50 60 70 80 90 100</p>	<p>x(13)</p> <p>10 20 30 40 50 60 70 80 90 100</p>

Note: There were 8 subjects (4 from each system) to answer, as in Part I, 9 items therefore giving a total of 72 items indicating use or non-use of the techniques.

non-awareness of use.

3. Programmed modern techniques.

(a) For industry of the 56 possible responses (8 subjects x 7 questions) 49 indicated use of this technique, while 7 indicated non-use or non-awareness of use.

(b) For education of the 56 possible responses, 21 indicated use of this technique, while 35 indicated non-use or non-awareness of use.

4. Non-programmed modern techniques.

(a) For industry of 64 possible responses (8 subjects x 8 questions) 24 responses indicated use of this technique, while 40 responses indicated non-use or non-awareness of use.

(b) For education of 64 possible responses 13 indicated use of the technique, while 51 indicated non-use or non-awareness of use.

A graphic representation comparing industry and education with respect to their responses to the decision-making technique study is shown in Table IV, page 41. As is shown in Table IV there were some striking similarities between industry and education as well as very noticeable differences. There were few differences between the organization in the traditional methods for making routine repetitive decisions. Both produced a "blue book" of standard operating procedures. Both had well developed organizational structures and charts to indicate those structures. Both designated which members of the organization

TABLE IV

A. COMPARISON OF THE DECISION-MAKING TECHNIQUES OF INDUSTRY AND EDUCATION

	Non-Use	Use
1. Programmed Traditional Techniques (72 items)	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>
2. Non-programmed Traditional Techniques (80 items)	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>
3. Programmed Modern Techniques (56 items)	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>
4. Non-programmed Modern Techniques (64 items)	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>	<p>100 90 80 70 60 50 40 30 20 10</p> <p>x ————— x</p> <p>Industry Education</p>

NB. N Industry = 8
N Education = 8

were responsible for which decisions. Education did not have a planned means to improve the decision-making skills of their employees. There were neither training programs nor planned tours of duty. Industry appeared to be making considerable use of both training and tours of duty.

Non-programmed traditional techniques were much less simple to isolate. Education expected competence from any individual coming into the organization either as a teacher or a decision-maker. There were no specific training programs beyond those provided for in university. If the individual wished, he could take in-service courses (at his own expense) provided by the school system.

One of the two industries had a definite training program for all levels of management. The other industry had a program for only the top echelons of management. Lower levels of management were given one months training at the Banff School of Management.

Both industry and education were vague about selection procedures for their executives, except that they generally sought people who appeared to have an ability to make decisions without having had any specific training. Industry showed more use of specialists for expertise and this factor seemed well developed. Education also used this technique of using expertise; however, it appeared to be a more recent development.

In the use of programmed modern techniques industry appeared to be well equipped with the hardware--computers and key punch machines--software enabling use of the technique. Education had some Electronic Data Processing equipment. However, it did not have other more sophisticated

technological aids. The more sophisticated instruments had been part of industries equipment for a number of years. Education was moving in the direction of greater sophistication, with both systems expecting their own computer installations by June, 1969. The education systems are now involved in the hiring of expertise such as systems analysts, to make use of these aids. In education, techniques such as linear and dynamic programming or game theory were thought of as useful tools for the future. Industry was making use of these techniques in the training of their executives, in addition to their use in day-to-day operations.

Neither industry nor education had advanced into the realm of non-programmed modern techniques. Neither had done research on simulation of human thought, or had developed heuristic programs for use in aiding executives in their decision-making.

The study reported here indicated that education had not generally advanced as far through Simon's model in their tools, training, or expertise as had industry.

The study reported here examined respondents from industry and from education to determine their attitude within their work environment. In both education and industry (with two exceptions) the respondents were in line positions. None of the respondents were in a position with authority.

Persons from education who participated in the study were teachers exclusively, ranging in age from 26 to 54, and whose teaching experience ranged from seven months to seven years, three months. The salary range

of the teachers was \$3000 to \$11,000 per annum. The majority of the respondents in education were married, had from one to five dependents, and had completed college. Over half of the teacher respondents owned their own home. All respondents were members of their professional organization.

Members of industry who participated in the study were in occupations ranging from clerk to engineering technician to geophysicist. The respondents from industry ranged in age from 19 to 46; some had two jobs (an extra job after their regular work day) although the majority of respondents had only one job. The respondents work experience ranged from one year to seventeen years. The majority, 82%, of the industrial respondents owned their own home, had one to eight dependents and had completed college. The respondents were earning salaries in the range of \$3000 to \$14000 per year. All but three of industries representatives were members of the professional organization serving their particular profession.

The subjects attitudes were examined in relation to seven areas. The seven areas were: (1) Something about yourself, (2) Your job, (3) Supervision, (4) People you work with, (5) Communication, (6) Your opinions and beliefs and (7) Changes in the firm. The results of the analysis by area are contained in Table IV, page 41. Of the 139 variables analyzed, 18 were statistically significant*. The eighteen statistically variables were in areas of (1) Your job, (2) The people you work with, (3) Your opinions and beliefs and (4) Changes in the

* In this discussion statistical significance refers to the .05 level of the Mann-Whitney U statistic. The Mann-Whitney U statistic compares the differences of summed ranks.

firm. The areas and the responses follow:

Something about yourself. There were no statistically significant responses in this area.

Your job. There were statistically significant responses to eleven of the questions asked of the two groups. The statistically significant responses to the questions were:

1. What do you think of your opportunity to remain effective under an increased work load?
 - industry responded: They would have a good chance to remain effective.
 - education responded: Only fair chance to remain effective.
2. How satisfied are you with your present salary?
 - industry responded: Fairly well satisfied.
 - education responded: Very little satisfied.
3. How does your place of employ compare with others as a place to work?
 - industry responded: About the same as most.
 - education responded: Better than most.
4. How do you feel about further growth and expansion?
 - industry responded: They wish for a great deal of expansion.
 - education responded: They would prefer the system remained the same.
5. What influence do you feel your professional organization has on what goes on in your sphere of influence?

- industry responded: Little or none.
 - education responded: Some influence.
6. In general how much influence do you think your professional organization should have on what goes on in your sphere of influence?
- industry responded: Little or none to some influence.
 - education responded: Quite a bit of influence.
7. To what extent do you think your company/school board is interested in the welfare of its employees?
- industry responded: Fairly to quite a bit interested.
 - education responded: Slightly to fairly interested.
8. In general what influence does the highest level of management/school board have on what your immediate peer groups do in the organization/schools?
- industry responded: A great deal of influence.
 - education responded: Quite a bit of influence.
9. How much say or influence does the highest level of management/school board have on what professional organizations do in the company/school?
- industry responded: Little or none.
 - education responded: Some influence.
10. On the job do you feel any pressure for better performance over and above what you think is reasonable?
- industry responded: A little pressure.
 - education responded: Very little pressure.

11. If you feel any pressure at all what is the main source of this pressure?

- industry responded: Higher management.
- education responded: Myself, things off the job.

People you work with. There were statistically significant responses to five of the questions asked of the two groups.

The responses to the questions were:

1. Do you feel that the replacements or substitutes hired are made to feel a part of the group?

- industry responded: That most regular employees do their best to make extra help feel a part of the group.
- education responded: Few to some of the regular employees do their best to make extra employees feel a part of the group.

2. How do people in your office/school feel about how your office/school compares with other similar offices/schools in getting the job done?

- industry responded: About the same as most.
- education responded: Better than most.

3. How strong a sense of belonging have you to your professional organization?

- industry responded: Little or none to some sense of belonging.
- education responded: Some to strong sense of belonging.

4. How do the people in your area feel about your school/office as a place to work?
- industry responded: About the same.
 - education responded: Better than most.
5. Suppose one of the people you work with does not appear to be competent. What sort of person do you think he might be?
- industry responded: He is probably a person who has less ability.
 - education responded: Does not care how he gets along with his immediate supervisor.

Communication. There were no statistically significant differences in the responses to questions asked of the two groups in this area.

Opinions and beliefs. There was one statistically significant response to questions asked of the two groups. The response to the question was:

1. Nowadays people are not willing to work as hard as they used to.
- industry responded: They disagree.
 - education responded: They strongly disagree.

Changes in the firm. There was one statistically significant response to questions asked of the two groups. The responses to the question:

1. In the past few years various changes have taken place the companies/schools. Do you feel that there has been any change in how good a job the men do?

- industry responded: Some change for the better.

- education responded: Considerable change for the better.

The study reported here noted that the decision-making structures discussed earlier had some similarities and some differences in their techniques when placed along Simon's paradigm. A measure of congruity was made between the decision-making structures (that is techniques placed in Simon's paradigm) and the people who operated in that environment. The rationale for the measure of congruity was that if the decision-making structure was good then people working in that structure would give positive responses. The respondent would be in agreement with the structure in which he finds himself. Conversely if the decision making structure was not good then people working in that structure would give positive responses. The respondent would be in agreement with the structure in which he finds himself. Conversely if the decision making structure was not good then people working in that structure would give negative responses. The respondent would not be in agreement in the structure in which he finds himself.

The responses reported in the study in Table V, page 50 were placed on a graph (Graph I, page 65) to illustrate the positiveness and negativeness of the responses toward the structure. The items had responses with ranges of three to eight choices in the answer. The midpoint of the range indicated a neutral response.

TABLE V

EFFECTIVENESS SURVEY: INDUSTRY AND EDUCATION MEDIANS

MANN-WHITNEY U BETWEEN TOTAL SAMPLE

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
A. Yourself (answers on a 4-point scale)	Feel about personal debt	2.37	1.88	101.0	1 = more than can handle
B. Your Job (answers on a 4-point scale)	Layout and Equipment				
	1. Design for ease of doing job	2.0	2.0	150.5	1 = improvement needed
	2. Overall efficiency	1.92	2.15	128.5	1 = improvement needed
	3. Mechanical condition	2.50	2.43	146.5	1 = improvement needed
	4. Adequacy of space	2.29	2.43	131.0	1 = improvement needed
	5. General appearance	2.07	2.71	107.5	1 = improvement needed
	Degree of satisfaction assignments	3.05	3.25	128.0	1 = not satisfied
	Pride in work	1.299	1.291	147.5	1 = great pride
	Time would stay in job	1.96	2.25	109.0	1 = until retirement

*U is significant at the .05 level, direction not predicted, when less than 92.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann Whitney "U"*	Scale
(Answers on a 5-point scale)	Attitude re own responsibility/job	3.50	3.93	107.5	1 = too much
	Own influence getting present job	2.90	2.81	136.5	1 = no say
	Freedom setting own work pace	1.94	1.57	119.5	1 = complete freedom
	Family, friends think of your job	1.5	1.45	144.5	1 = good job
	Job make nervous	2.5	2.57	152	1 = yes
	Job make lose sleep	3.05	2.9	132	1 = yes
	Work hard/job	2.86	2.7	124	1 = extremely hard
B. Your job continued (answers on a 5-point scale)	Understand standard your job	2.25	2.0	122.5	1 = completely
	Feel/job standard	2.0	2.4	137	1 = very fair
	Effectiveness/increased load	1.83	2.59	89 +	1 = excellent
	Satisfied/present salary	2.7	3.33	70 +	1 = completely
	Satisfied/chances advancement	3.25	2.7	102	1 = not satisfied

+Significant factors at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann Whitney "U"*	Scale
B. Your Job continued (answers on a 5-point scale)	Take supervisory job if offered	1.6	1.75	133.0	1 = definitely
	How paid	5	5	152	5 = salary
	Place employ/compare	2.75	1.95	99 +	1 = better than most
	Feel growth/company	1.03	2.42	29 +	1 = hope expand great deal
	Influence on you of:				
	1. Top management, school board	3.5	2.6	136	1 = little or none
	2. Area manager superintendent	2.8	2.6	133	1 = little or none
	3. Office manager, Principal	2.0	2.79	95	1 = little or none
	4. Supervisor Department Head	3.0	2.7	131.5	1 = little or none
	5. Immediate peers	2.85	2.25	117.0	1 = little or none
	6. Professional Organization	1.22	2.04	92 +	1 = little or none

+Significant factors at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann Whitney "U"*	Scale
B. Your Job continued (answers on a 5-point scale)	Influence of you on:				
	1. Top level management, school board	2.83	2.22	116	1 = little or none
	2. Area manager, superintendent	2.73	2.22	124	1 = little or none
	3. Office manager, prin.	2.09	2.62	114	1 = little or none
	4. Supervisor Dept. Head	3.62	3.00	125	1 = little or none
	5. Immediate peers	2.83	2.33	128	1 = little or none
	6. Professional Organization	1.50	2.45	77 +	1 = little or none
	Satisfied/recognition	2.61	2.65	144.5	1 = completely satisfied
	Company Interest/employees	2.35	3.25	92 +	1 - very much interested
	Influence highest level of management of:				
	1. Top level management, school board	4.6	3.12	94	1 - little or none

+Significant factors at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
B. Your Job continued (answers on a 5-point scale)	2. Area manager, superintendent	4.3	3.3	105	1 = little or none
	3. Office manager, principal	3.94	3.57	127	1 = little or none
	4. Supervisor, Dept. Head	3.5	2.4	108	1 = little or none
	5. Immediate peers	3.0	2.04	86 +	1 = little or none
	6. Professional Organization	1.12	2.31	65 +	1 = little or none
	Feel pressure/job	4.16	5.54	84.5 +	1 = great pressure
Answers on an 6-point scale	Do people agree daily operation	2.16	2.17	150	1 - complete agreement
	You consulted about change	2.21	3.08	110	1 = very often
Answers on a 7-point scale	How well/ people around you perform	2.5	2.43	150	1 = an excellent job
	Feel pressure/ What is source	4.09	5.22	81.5 +	1. Kind of work/do 2. Supervisors 3. People/work with 4. Higher management 5. Myself

+Significant factors at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
Answers on a 7-point scale (cont.)					6. Things off job 7. Other (Say) 8. No pressure
C. Supervision (answers on a 4-point scale)	Freedom/discuss problems supervisor	3.21	3.55	120	1 = not free
Supervision (answers on a 5-point scale)	Immediate supervisor stand up for you	4.29	4.43	135	1 = No he won't
	Immediate supervisor have enough authority	2.5	2.8	126	1 = yes, more than he needs
	Immediate supervisor thinks/your work	2.0	2.10	132	1 = know what he thinks
	How good immediate supervisor/planning	2.25	2.68	117.5	1 = excellent
	Feel/immed. supervisor expects of you	3.0	3.25	112	1 = expects too much
	Your influence/immediate supervisor	2.77	2.44	128	1 - great extent

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
C. Supervision (answers on a 5-point scale)	Immed.sup. ask your opinion	1.75	1.58	148	1 = always asks
	Immed.sup. interested welfare subordinates	1.94	1.45	116	1 = very interested
	How satisfied you/immed.sup.	2.00	1.85	140	1 = completely satisfied
	Influence office manager or principal has on:				
	1. Top level management school board	2.21	1.88	117.5	1 = little or no influence
	2. Area manager superintendent	2.33	2.22	137.5	1 = little or no influence
	3. Office manager, principal	2.29	4.00	112	1 = little or no influence
	4. Supervisor, Department Head	2.83	3.71	100	1 = little or no influence
	5. Immediate peers	3.5	3.1	151.5	1 = little or no influence
	6. Prog.Organ.	1.21	1.75	102.5	1 = little or no influence
	How good manager, principal with people	1.16	2.08	114	1 = excellent

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
C. Supervision (answers on a 5-point scale)	Influence you have/ manager, principal	2.6	3.2	110	1 = Great Extent
	Reaction/what manager, principal expect you	2.16	3.00	107	1 = expects too much
	Sup. regard for prof. organization	1.16	1.57	132	1 = all favorable to
	Extent confidence in supervisor	1.7	1.9	136	1 = great extent
	Have group meetings with supervisors	2.5	2.14	136	1 = yes worthwhile
	Influence of Area Manager, Superintendent on:				
	1. Top level management, school board	1.16	2.9	104	1 = little or none
	2. Area manager, Superintendent	1.25	2.75	111	1 = little or none
	3. Office Manager, Principal	1.25	3.25	111	1 = little or none
	4. Supervisor, Dept. Head	1.25	2.20	118	1 = little or none

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
C. Supervision answers on a 5-point scale	5. Immediate peers	1.25	2.00	111	1 = little or none
	6. Prof. Organization	.87	1.437	98	1 = little or none
	How well department run	2.5	1.62	135	1 = excellent
	Influence dept. heads/supervisors on:				
	1. Top level management, school board	2.16	1.18	101.5	1 = little or none
	2. Area Manager, Superintendent	2.09	1.43	120	1 = little or none
	3. Office Manager, Principal	2.64	2.41	141.5	1 = little or none
	4. Supervisor, Dept. Head	2.66	2.66	141.0	1 = little or none
	5. Immediate peers	2.92	2.68	139	1 = little or none
	6. Professional Organization	.875	1.22	116	1 = little or none

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
Answers on a 6-point scale	How good supervisor with people	2.0	2.28	122	1 = excellent
D. People you work with (answers on a 5-point scale)	How do men compare in your job/ helping each other	3.5	4.0	120	1 = poor
	Your group compare/getting job done	2.7	2.28	120	1 = among very best
	Morale in your group	2.07	2.09	146	1 = excellent
	Your place of work/compare	2.5	2.41	143	1 = very best
	Who take grievance to	1.928	1.923	149	1 = supervisor
	Substitutes made to feel part of group	1.27	2.31	61.5 +	1 = yes/most try
	You agree/ opinions, beliefs men/ work with	3.6	3.9	109.5	1 = no agreement
	Influence of Men In Your Area on: Top level management, school board	-94	1.81	114	1 = little or no influence

+Significant at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
D. People you work with (answers on a 5-point scale)	Area Manager Central Admin.	1.0	2.12	72 +	1 = little or no influence
	Office Manager, Principal	2.25	2.91	97	1 = little or no influence
	Supervisor, Dept. Head	2.12	1.75	109	1 = little or no influence
	Immediate peers	2.7	2.43	127	1 = little or no influence
Answers on a 6-point scale	Peers think professional organization	2.75	3.14	114	1 = very well
	Peers regard morale	2.78	2.12	114	1 = excellent
	Your office compare getting a job done	3.00	2.12	66 +	1 = very best
	How men feel area run	2.0	2.5	144	1 = excellent
	Men have accurate picture/operation their area	2.94	2.65	121	1 = completely
	Area as place to work	2.5	1.92	42 +	1 = better than most

+Significant at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
D. People you work with (answers on a 3-point scale)	How strong a sense of belonging have you for:				
	1. Teaching/ job indust.	2.35	2.63	122.5	1 = little or none
	2. School board, senior company	1.95	1.93	149	1 = little or none
	3. Where you work	2.5	2.76	122	1 = little or none
	4. People you work with	2.6	2.76	124	1 = little or none
	5. Professional organization	1.48	2.58	34.5 +	1 = little or none
E. Communication (answers on a 4-point scale)	Know enough to do your job	2.27	1.92	105.5	1 = more than is necessary
Answers on a 5-point scale	Have you accurate picture your area	2.07	2.31	116	1 = completely accurate
	How do you feel about innovations here	1.67	1.844	139	1 = very worthwhile

+Significant at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
E. Communi- cation (answers on a 6-point scale)	Ease/pass on ideas to management	3.83	3.9	149	1 = very difficult
	How well school board/ top level management understand teachers/ workers viewpoint	3.5	3.85	122.5	1 = complete understanding
F. Your opin- ions and beliefs (answers on a 6-point scale)	Too much spent on leisure	3.9	3.8	150.5	1 = strongly agree
	Error/check first your fault	2.0	1.57	115	1 = strongly agree
	Main question/ cost	2.08	1.95	132	1 = strongly disagree
	Little under- stand/world today	4.04	4.36	104	1 = strongly agree
	Today people won't work hard	3.61	4.11	90 +	1 = strongly agree
G. Changes in the firm (answers on a 4-point scale)	How much do you expect	1.94	2.06	140	1 = many impor- tant changes

+Significant at the .05 level.

TABLE V (continued)

	Description of Item	Industry Median	Education Median	Mann-Whitney "U"*	Scale
G. Changes in the firm (answers on a 5-point scale)	Has there been any change in the following:				
	How well structure run	2.94	2.75	142.5	1 = change for better
	Job supervisors do	3.07	3.11	147	1 = change for better
	Job men do	3.05	2.63	91.5 +	1 = change for better
	Quality of Service to people	2.87	2.42	104	1 = change for better
	Efficiency and costs	2.83	3.25	122	1 = change for better
Answers on a 6-point scale	Changes lead to better ways	2.08	2.27	128.5	1 = always
	Men feel about changes	2.83	1.77	133	1 = changes improve things/ everybody
H. Three factors which indicate competence (10-point scale)	1st median choice	3.8	3.9	143.5	4 = has more ability
	2nd median choice	5.3	6.8	118	5 = wants to get ahead
	3rd median choice	10.0	10.0	143	7 = putting out extreme effort
					10 = takes real pride good days work

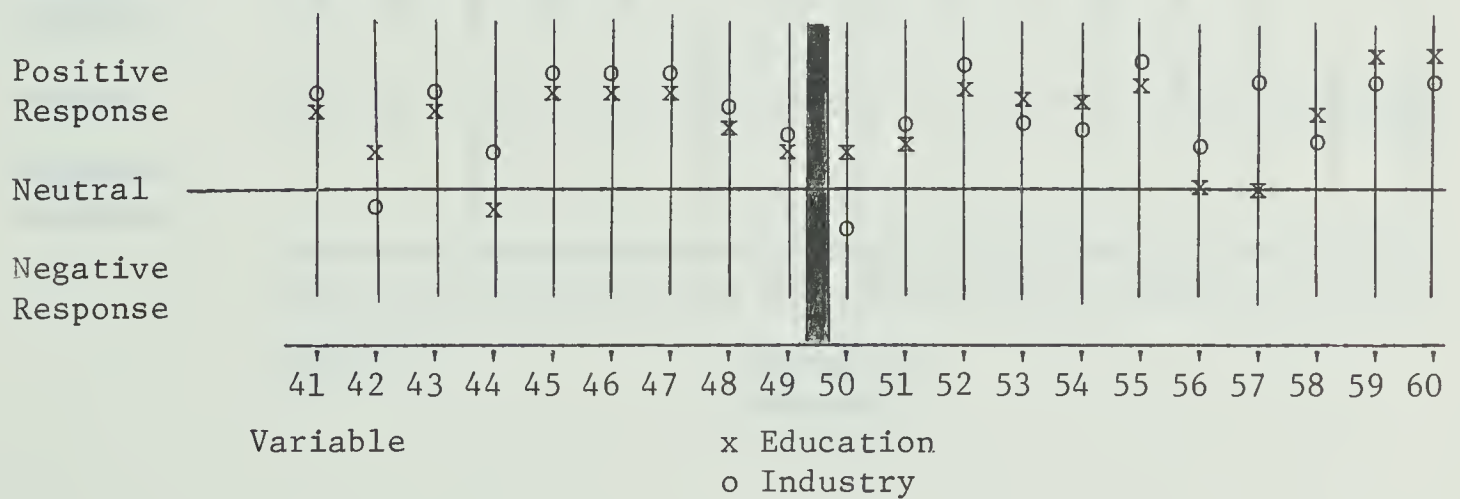
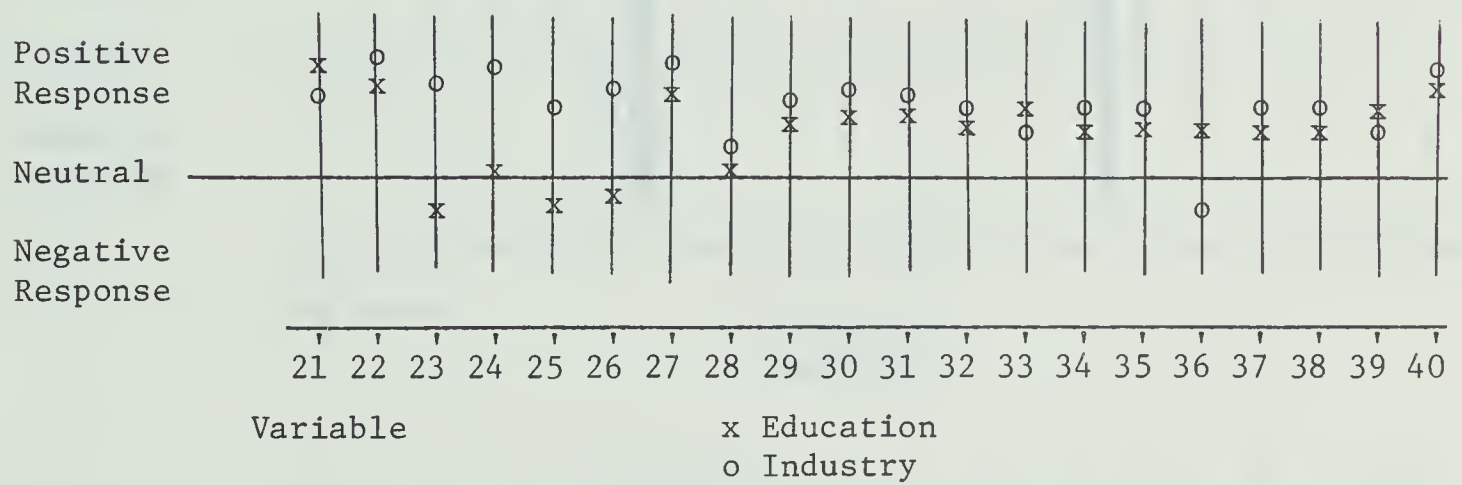
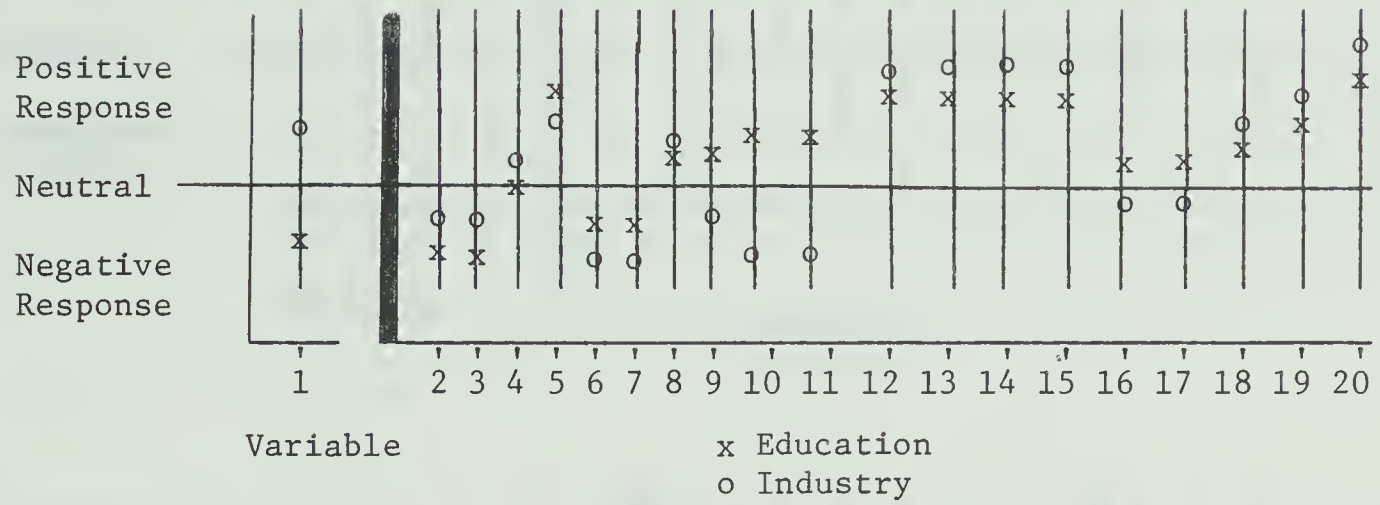
+Significant at the .05 level.

TABLE V (continued)

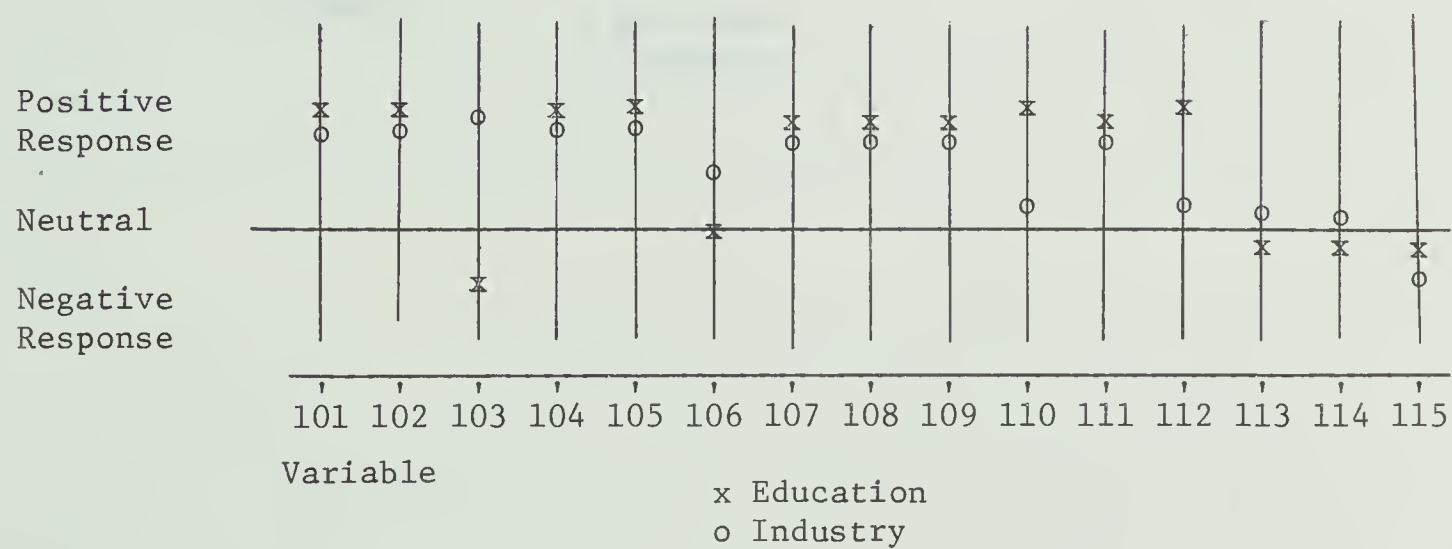
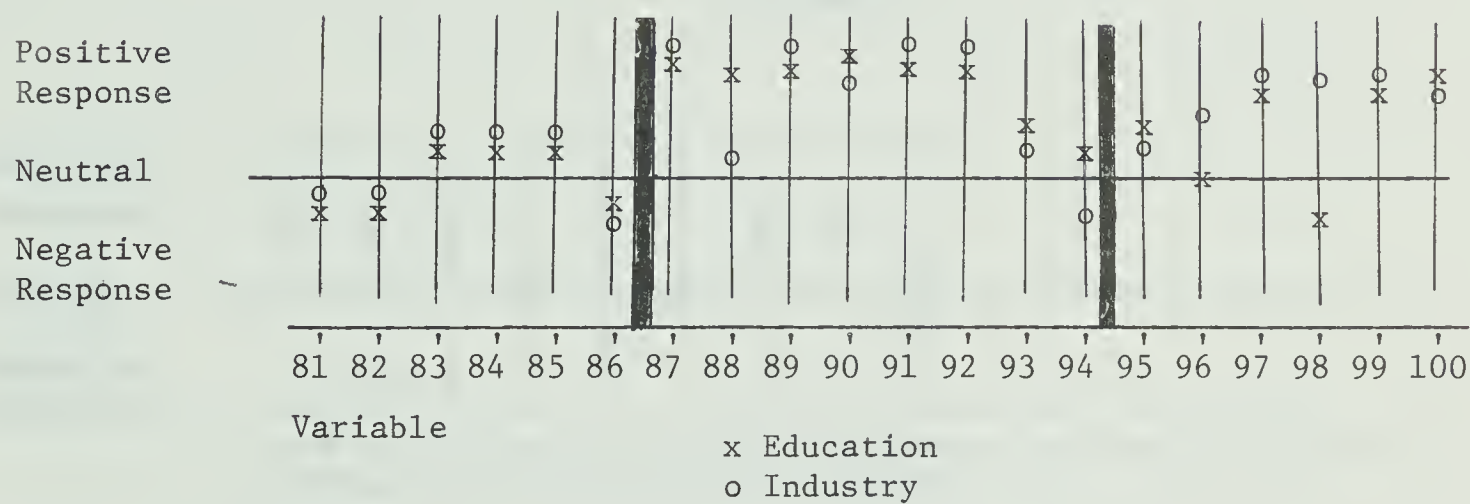
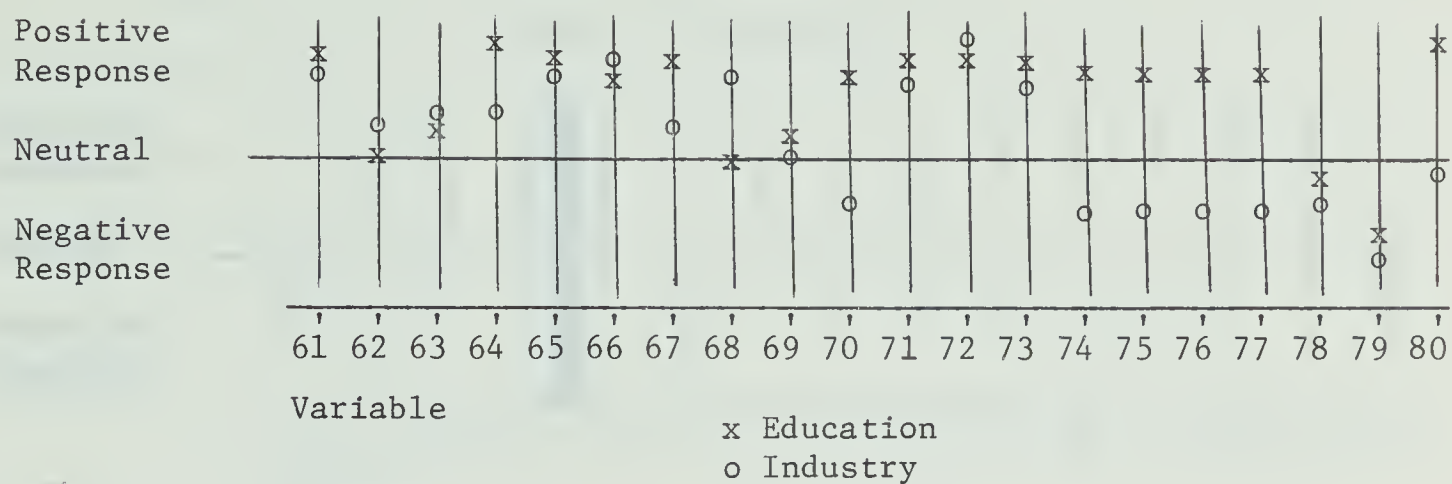
	Description of Item	Industry Median	Education Median	Mann- Whitney "U"*	Scale
I. Three factors which indicate non-com- petence (10-point scale)	1st median choice	3.5	3.25	92 +	3 = interested in quality
	2nd median choice	5.25	6.5	145	4 = has less ability
	3rd median choice	9.9	9.8	143	5 = not care/ getting ahead 6 = job difficult 7 = not putting out 10 = no pride

GRAPH I

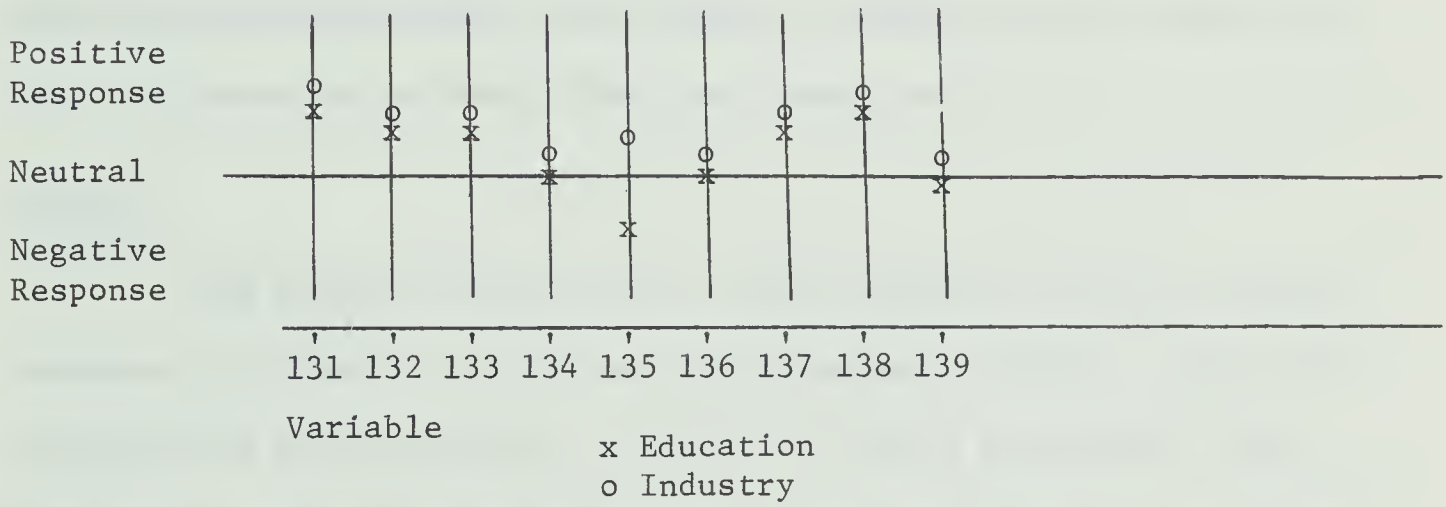
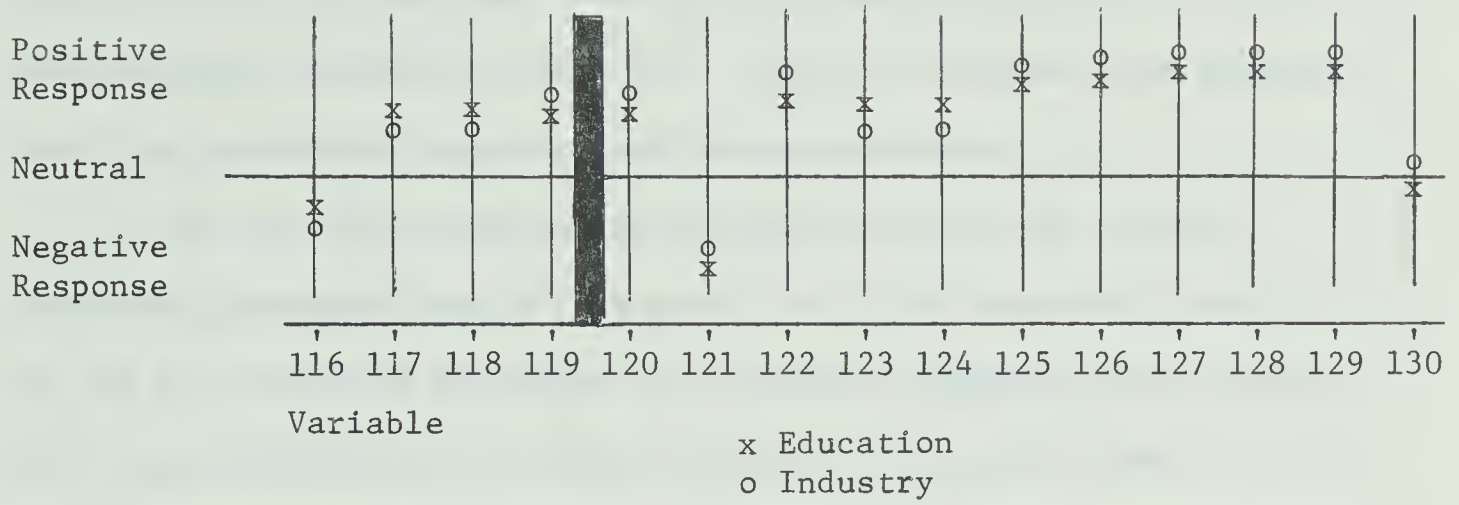
MEASURE OF CONGRUITY



GRAPH I (continued)



GRAPH I (continued)



Fourteen items showed a lack of similarity on Graph I, page 65. Eighteen items showed statistically significant differences on the Mann-Whitney U (Table IV, page 41). Four of the items were common to both the measure of congruity and the Mann-Whitney U.

Of the 139 variables investigated by the study industry responded positively on 105, neutrally on 12 and negatively on 22. Of the 139 variables investigated, education responded positively on 102 items, neutrally on 18 items and negatively on 19 items.

Results of the measure of congruity indicated that industry and education persons not in positions of authority are in agreement with the structure in which they find themselves.

Summary

This chapter presented the results obtained from two surveys conducted in selected industries and educational systems. One survey examined the decision-making techniques of those structures, while the other examined the effectiveness of the individuals in positions with no authority who were in the same environment as the decision-makers.

The results of the decision-making study were placed along Simon's paradigm. The findings showed that industry had incorporated techniques of decision which included traditional techniques and modern techniques. Education had incorporated traditional techniques but was not using modern techniques to the same extent as industry. Tables were created to illustrate the difference between the two sets of organizations.

The results of the effectiveness questionnaire showed the attitudes of those persons who had no authority, in their work environment. Demographic data were presented which compared the respondents' background. A Mann-Whitney U test done on the two groups to determine whether the differences between education and industry were statistically significant. Of the 139 variables tested, 17 were found to be statistically significant at .05 level. The attitudes examined were in relation to seven areas. The seven areas were (1) Something about yourself, (2) Your job, (3) Supervision, (4) People you work with, (5) Communications, (6) Your opinions and beliefs, and (7) Changes in the firm. A table (Table V, page 50) was created to show the results of the Mann-Whitney U test and to compare medians of the variables as responded to by industry and education.

A measure of congruity was made between the decision structure and the people who operated in that environment. The responses indicated that the persons in industry and education were in agreement with the structures in which they operated.

CHAPTER V

RESULTS, DISCUSSIONS AND IMPLICATIONS

The study reported here investigated two problems: (1) Is it possible to determine the types and techniques of decision-making processes used in industry and education? and (2) Is it possible to determine the effectiveness of the decision-making processes of educational and industrial organizations? Personnel in management line positions in two large educational systems and two industries which showed a good return on investment provided the investigator with data (gathered with an instrument based on Simon's paradigm) to answer the first question. Personnel in line positions with no authority from the same institutions noted above, provided the investigator with data (use of the Georgopoulos Tannenbaum instrument) to answer the second question. This chapter presents the results obtained, discusses the results (and their limitations) with implications for education.

Results

Question 1: Is it possible to determine the types and techniques of decision-making processes used in industry and education?

Tables II, III, and IV (pages 38, 39, and 41) illustrate the ability to place subjects' responses by item according to the types and techniques of decision making. In addition to being able to identify the technique a measure was produced which showed the extent of use and non-use of

these techniques. Table II, page 38; Techniques Used by Industry, indicates the extensive use of programmed traditional, non-programmed traditional and programmed modern techniques by industry. It also illustrates relatively less use of non-programmed modern techniques. Table III, page 39; Techniques Used by Education, indicates the extensive use of programmed traditional and non-programmed traditional techniques by education. It also illustrates relatively less use of programmed modern and non-programmed modern techniques by education.

The identification of types and techniques of decision-making processes used in this study also permitted the comparison of decision-making techniques of two dissimilar large-scale organizations. Table IV, page 41; A Comparison of Decision-Making Techniques of Industry and Education, illustrates that industry makes more use of non-programmed traditional, programmed modern, and non-programmed modern techniques and less use (than education) of programmed traditional techniques.

In general, therefore, the methods and instrumentation permitted the first question posed in the study to be answered in the affirmative.

Question 2: Is it possible to determine the effectiveness of the decision-making processes of educational and industrial organizations?

As noted earlier in the study (page 43) the intent here was to determine if a person not in authority was in agreement with the decision-making structure which characterized his working environment. Items on the Georgopoulos-Tannenbaum instrument were grouped into seven categories. Table V, page 50, illustrates the grouping of items by category.

A measure of subjects' responses was obtained for each item by industry and education and medians were calculated. The Mann-Whitney test was done on each item between industry and education to determine the statistical difference between group responses. Eighteen of 139 items were statistically significant at the .05 level. Eleven of the 18 statistically significant items were in the category which measured the respondent's effectiveness in his job. Five of the 18 statistically significant items were in the category which measured the effectiveness of the respondent and people with whom he worked. One was in the category which measured opinions and beliefs and one was in the category: changes in the firm.

A measure of congruity was constructed to illustrate the positiveness and negativeness of the median responses by item by group. That is, a plot was made of the deviation of the group responses from a neutral value on each item. There were 20 responses which were different in direction between industry and education, 8 which were positive for industry and negative for education, and 12 which were positive for education and negative for industry. In addition to these 13 were noticeably different in degree although they were in the same direction for each group.

The overall direction of the responses on the Measure of Congruity, page 65, for both industry and education was a positive one. The evidence indicated that it was possible to measure the effectiveness of the decision-making process of educational and industrial organizations.

Discussion and Implications

The results of the study were encouraging in that they gave evidence of the ability to apply a theory of decision-making to practical situations. Simon's paradigm seemed to lend itself well to analysis of decision-making structures both in industry and education. Data collected to determine decision-making techniques did not lend themselves to statistical analysis. An accurate representation however, of the questionnaire data was possible. Reasoned judgment was required in the placement of items along Simon's model, and this method, of course, is subject to question.

The applicability of Simon's paradigm to Decision-Making Techniques that concerted effort be taken to determine if other representative organizations and institutions can be analyzed in a manner similar to that done here. It is suggested that research be undertaken both on the refinement of the instrument used and the selection of organizations to be studied so that generalizations about decision-making techniques can be made.

The instrument used to measure effectiveness requires refinement. A major disadvantage of the instrument was the variety of scales used to measure subjects' responses, which in turn presented problems for data analysis. A larger sample of a random selection may have yielded data which permitted more clear-cut conclusions.

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APPENDICES

APPENDIX A

APPENDIX A

In any business or administrative unit decisions must be made. Simon feels that all decisions are one of two types, which may be made by using different techniques.

Simon describes these decisions as either programmed or non-programmed. Through using the following questions we hope to discover just exactly what procedures you are using and what techniques are being used to implement these decision-making processes.

1. Of the decisions made how many are made from committee?
2. When a person comes into the office as a trainee how much time is used up in training?
3. Does a new worker become productive and a decision-maker immediately?
4. How deep is the authority structure in your organization?
5. Do you have a training program for all levels of management whereby their decision-making habits can be examined, modified or improved?
6. Do you have a structure of sub-goals that are serving as criteria of choice in various parts of your organization?
7. Are there people in your organization responsible for scrutinizing parts of the organizations environment?
8. Do you have people or means for communicating events requiring attention to appropriate decision points?
9. Do you employ in your own office any of these techniques?
 - (a) Improving knowledge skills and techniques of individual employees using training program?
 - (b) Do you have planned tours of duty?
 - (c) Do you attempt to revise your standard operating procedures?
 - (d) Do you make attempts to secure adherence to your standard operating procedure?

10. (a) Have attempts been made to alter the division of labor?
(b) Have attempts been made to alter your sub-goal structure?
(c) Have attempts been made to alter the allocation of responsibility in your system?
11. In what parts of your own area do you exercise judgement?
(a) How much of this depends on your own judgement?
(b) How much of this depends on your own insight?
(c) How much of this depends on your own intuition?
12. Are there any attempts made to help you or your staff improve in or be trained in orderly thinking?
13. In your selection of decision-makers, do you depend on people who seem to have this faculty to begin with?
14. In your corporation do you use systems analysis? (In the particular department which you head do you use a systems analyst?)
15. Are decisions made in your department which affect your department simply or do they affect the system as a whole?
16. Is the system if designed, one which will incorporate the need for change readily? Do you use particular analysis, economic or mathematical for your indication of the need for change?
17. Has the operation ever been operated on the basis of a mathematical model, that would satisfy the conditions of any decision tool you use?
18. Does the computer or over-manifestation of it enter into your operation at all?
19. If future plans include the use of a computer will its purpose be that to aid a specific area or your whole operation?
20. Do you use linear programming; dynamic programming; game theory; probability models in any part of your decision structure?
21. Does the operation have a criterion function--a measure for comparing relative merits of various possible courses of action?
(a) What do you use for parameters? (selection of the best alternative of those available)

- (b) Is maximization of your goal a must or will the corporation satisfice?
 - (c) Do you make use of a mathematical function of games to enable you to maximize? e.g. (computer simulation).
22. Has this corporation done any research on human problem solving techniques? Simulation of human thought?
- (a) Is the computer amenable to this?
23. At this moment is your computer flexible and adaptable to the conditions of the environment?
- (a) Does the computer indicate for you your progress?
 - (b) Does the program you use analyse its own performance, will it diagnose its failures, will it make changes, or will your human decision-makers do this quickly enough to enhance your effectiveness?
24. Have you found that the computer can do enough decision-making at this point to economically reduce your middle management by 10 persons?
25. What means do you have for diagnosing the difficulties of your own specific problem solving program or what help is available to help you modify your problem solving strategies in specific ways?
26. In our estimation the computer has the capacity to operate at certain levels. Some fundamentals of organization design are as:
- (a) Basic work processes--bottom layer.
 - (b) Programmed decision-making--middle layer--day-to-day operation.
 - (c) Non-programmed decision-making--top layer--processes required to design and redesign the system.

In your estimation, do you incorporate technical help at any of these layers? If so which?

27. Questions about the centralization and decentralization function:
- (a) To what extent does the computer take a part in the centralization or decentralization function of your company?
 - i) To centralize?
 - ii) To decentralize?

APPENDIX B

PROGRAMMED TRADITIONAL
DECISION-MAKING TECHNIQUES

	Decision/Committee ----- Decision/Self	What is the depth of hierarchy?	Do you have a sub-goal structure?	Are there people responsible for speci- fic parts of the organ- izations environment?	Are there information channels to decision- making points?	Division of labor	Sub-goal structure	Allocation of responsibilities	Do decisions affect whole or department only?
Industry No. 1	40*/60	7	Yes	Yes	Yes	Y	N	U	Whole
	50/50	5	Yes	Yes	Yes	Y	Y	Y	Department Mostly
	75/25	6	Yes	Yes	Yes	Y	N	N	Whole
	80/20	4	Yes	Yes	Yes	Y	Y	N	Department Mostly
Industry No. 2	80/20	7	Yes	Yes	Yes	Y	Y	Y	Whole
	75/25	7	Yes	Yes	Yes	Y	Y	Y	Whole
	75/25	6	No	Yes	Yes	Y	Y	Y	Whole
	50/50	6	No	Yes	Yes	Y	Y	Y	Whole
School System No. 1	90/10	5	Yes	Yes	Yes	Y	Y	Y	Whole
	90/10	5	No	Yes	Yes	Y	Y	Y	Department Mostly
	50/50	3	Yes	Yes	Yes Very Weak	Y	Y	Y	Department Mostly
	20/80	5	Yes	Yes	Yes Weak	Y	Y	Y	Department Only
School System No. 2	50/50	4	Yes	Yes	Yes Weak	Y	Y	Y	Department Mostly
	50/50	7	Yes	No	Yes Weak	N	Y	N	Department Only
	90/10	7/4	Yes	Yes	Yes Weak	N	Y	Y	Whole
	80/20	4	Yes	Yes	Yes	Y	Y	Y	Department Mostly
	1	4	6	7	8	10	15		

* Answer in percent.

Y--Yes, N--No, U--Uncertain

NON-PROGRAMMED TRADITIONAL
DECISION-MAKING TECHNIQUES

	Time used for person to become productive?	New worker a productive decision-maker immediately?	Training program for all levels of management?	Techniques used: A. Knowledge and skill B. Planned tours C. Standard oper. proc. D. Require adhere to C	Are you able to use your own judgment; insight; intuition?	Do you have any means of training people in orderly thinking?	In your selection of decision-makers, must they have decision-making faculties to begin with?
Industry No. 1	One Year	Not Immed.	Yes	A. Yes B. Yes C. Yes D. Yes	Complete Freedom	Yes	Yes
	One Year	Not Immed.	Yes	A. Yes B. Yes C. Yes D. No	Free--Held Accountable	Yes	Not Necessary
	One Year	Not Immed.	Yes	A. Yes B. Yes C. Yes D. B.R.	Yes--Held Responsible	Yes	Need Some
	One Year	Not Immed.	Yes	A. Yes B. Yes C. Yes D. B.R.*	Yes	Yes	Not Always
Industry No. 2	Reassessed continually	Not Immed.	Yes	A. Yes B. Yes C. Yes D. Yes	Yes	Yes	Yes
	1--2 Years	3 Months 1 Year	No*	A. Yes B. No C. Yes D. Yes	With Limits	Yes	Yes
	2 Years	3 Months Not Immed.	No	A. Yes B. No C. Yes D. Yes	Limit	Yes	Yes
	1 Year	Not Immed.	No	A. Yes B. No C. Yes D. Yes	Within Limits	Yes	Yes
School System No. 1	None	Soon 1 Year	No In-Service	A. Yes B. Yes C. Yes D. No	Total Freedom	Yes	Yes Ability
	None	Yes 6 Months	No	A. Yes B. No C. Yes C. Yes	Complete Freedom	No	Yes
	None	Immed. 3 Years	No	A. Yes B. No C. Yes D. Yes	Within Limits	No	No
	None	Quick 3 Years	No	A. No B. No C. Yes D. Yes	Within Limits	No	No
School System No. 2	None Pres.	Quick 4--5 Months	Yes Weak	A. Yes B. Yes C. Yes D. Yes	Yes All Areas	Yes Meet	Yes
	3--4 Months	Varv 3--4 Months	No	A. Yes B. No C. Yes D. Yes	Generally	Yes	Yes
	Assess. Comp.	Immed. 3 Years	No	A. Yes B. No C. Maybe D. Yes	Yes	Yes	No
	1 Month Interval	2--3 Months Varies	No	A. Yes B. No C. Yes D. No	Own Area	No	Yes
	2	3	5	9	11	12	13

* Two week program.

PROGRAMMED-MODERN

DECISION-MAKING TECHNIQUES

	Is there use made of systems analysis	Do you incorporate the need for change? Mathematical or Economic means analysis?	Use mathematical model to satisfy decision-making tools in use.	Are Linear Programming, Dynamic Programming, Game Theory Probability models in use?	Is your computer flexible? Does it show progress?	Computer enter into program at all?	Is the computer used in a specific area or the whole operation?
Industry No. 1	Part	Need Flex.	Yes	LP DP	Yes	Yes	Whole
	Part	Use Math. Analyses	Yes	LP DP Prob.	No Report	Yes	Whole
	Yes	Use Econ. Analyses	Yes	LP DP Prob.	Yes	Yes	Whole
	No	Flex.	Yes	GT in training	Yes aid in human problem solving	Yes	Whole
Industry No. 2	Yes Tech.	Moving toward	No	LP DP GT	No infor. retriev.	Yes	Whole Exp.
	Yes	No Needed	No	LP	Yes Both	Yes	Whole
	Yes	Yes Econ.	No	No	Yes Both	Yes	Whole
	Yes	No	No	No	Yes Both	Yes	Whole
School System No. 1	Yes Part	No: Econ. Yes: Math.	Yes	LP DP	Not Certain	No	Whole*
	No Not Perm.	No	No	LP DP GT	Not Known	Data Processing	Whole*
	No	No: Econ. Yes: Math.	No	LP DP GT	Not Aware	Data Processing	Whole*
	No	Yes: Econ. Yes: Math.	No	LP DP	Not Future	Data Processing	Whole*
School System No. 2	No is plan	Yes Both	No	None Yet	Not Known	Only Data	Whole*
	No	Yes: Econ. No: Math.	No	No	Not Certain	No Data Processing	Whole*
	Yes Elem.	Yes: Econ. No: Math.	Yes Econ.	Some	No No	No Data Processing	Whole*
	No	Yes: Econ. No: Math.	No	Not Known	Not Known	Yes Data Processing	Not Known
	14	16	17	20	23	18	19

* Indicates that use of computer will be applied to whole operation in the future.

NON-PROGRAMMED MODERN

DECISION-MAKING TECHNIQUES

	1. Do you have a criterion function or maximize only? 2. Will you satisfy or maximize only? 3. Do you use mathematical function?	Use of computer: A. Human problem solv B. Simulation of human thought C. Is computer amenable to this?	Means to diagnose difficulties in problem solving?	Do you use technical help at any level in your decision-making?	Will the computer centralize or decentralize functions in your company?
Industry No. 1	Yes/Satisfice Yes	No/Yes No	Reapply Known Information	Information Retrieval	Central.*
	Yes/Satisfice Yes	No/Yes No	Reservoir Studies	Information Retrieval	Central.
	Yes/Satisfice Yes	No/Yes No	Adjust. Model	Information Retrieval	Central.
	Yes/Satisfice Yes	No/Yes No	Critique	Information Retrieval	Central.
	Yes/Satisfice Yes	Yes/Yes No	No/Standard Practice	Economic Analysis	Central.
	Yes/Satisfice Yes	No/Yes No	Yes/Technical Information	Information Retrieval	Central.
	Yes/Satisfice Yes	No/No	Yes/Technical Information	Information Retrieval	Central.
	Yes/Satisfice Yes	No/No	Accounting Information	Information Retrieval	Central.
	Yes/Satisfice Yes	No/Yes	No	Not Certain Pupil Account.	Central. Decentral.*
	Yes/Satisfice Yes	No/Yes	Information Retrieval	None Yet	Central. Decentral.
	Yes/Satisfice No	No/No	Information Retrieval	None Yet	Central. Decentral.
	Not Known	No/No	Accounting Only	No	Central.
	Yes/Satisfice No	No/Yes	No	Accounting Only	Central. Decentral.
	Yes/Satisfice No	No/Yes	No	Simple Operation	No Effect
	Yes/Satisfice No	No/No	No	Progressive Studies	Central. Decentral.
	Not Known	No/No	No	Not Known	Not Known
	21	22	25	26	27

* Centralize--Accounting; Decentralize--Authority.

APPENDIX C

UNIVERSITY OF ALBERTA
DEPARTMENT OF VOCATIONAL EDUCATION AND
INDUSTRIAL ARTS
Edmonton, Alberta

We are making a survey of the ideas and opinions of the people who work at the _____. This is one of many scientific surveys being made by research teams from the University of Alberta. The main aim of these studies is to learn how different organizations operate and what makes a company a better place to work.

To get the information on how you think and feel about your place of employment we would like you to fill out this questionnaire. Your individual answers are completely confidential and no in the company will ever see any of them.

The final value of this study depends upon the frankness and care with which you answer the questions. This is not a test. There are no right or wrong answers. The main idea is for you to answer the questions the way you really feel--the way things seem to you personally. The questions will cover a number of topics, including the company, your job, wages and promotions, supervision and other similar things.

Thank you for your cooperation.

Dept. of Voc. Ed. and Ind. Arts
University of Alberta
Edmonton, Alberta.

INSTRUCTIONS

1. Please answer the questions in order. Do not skip around.
2. If there is something you don't understand, ask the person from the University of Alberta who is helping with the questionnaires.
3. For most questions no writing is needed. Just check (✓) the answer that fits your case best.
4. If you want to write an explanation or comment about an answer feel free to do so.
5. Be sure and answer all the questions.

SOME THINGS ABOUT YOURSELF

The way people feel and the ideas they have may be different because of the years they have worked, the amount of money they make, or the kind of job they have, etcetera. We, therefore, need some basic, personal facts about you, such as age, length of service with the company, and other things. Let us remind you again about the confidential nature of our work. No one in the company or the union will ever see your answers.

Now for the questions:

- | | |
|---|---|
| <p>1. How long have you been in this company? (Write in)</p> <p>_____Years _____Months</p> | <p>6. How much education have you had? (Check the highest completed)</p> <p>_____ (1) Some grade school</p> |
| <p>2. Ordinarily, what time do you start your days work? (Write in)</p> <p>Hour: _____A.M. or _____P.M.</p> | <p>_____ (2) Completed grade school</p> |
| <p>3. How old are you? (Write in)</p> <p>_____Years</p> | <p>_____ (3) Some high school</p> |
| <p>4. What is your job where you work?</p> <p>_____</p> | <p>_____ (4) Completed high school</p> |
| <p>5. Do you do anything else in addition to your main job? (Check one)</p> <p>_____ (1) Yes, I also do other kinds of work.</p> <p>_____ (2) No, thats all I do.</p> | <p>_____ (5) Business, trade, or night school</p> |
| | <p>_____ (6) Some college</p> |
| | <p>_____ (7) Completed college</p> |
| | <p>7. Are you married? (Check one)</p> <p>_____ (1) Single</p> |
| | <p>_____ (2) Married</p> |
| | <p>_____ (3) Widowed</p> |
| | <p>_____ (4) Divorced or separated</p> |

8. If you are married, does your wife work? (Check one)
- ____(1) She does not work.
- ____(2) She works part-time.
- ____(3) She works full-time.
9. How many dependents do you have--children, wife, others? (Write in)
- ____ Total number
10. Do you own your own home? (Check one)
- ____(1) Yes
- ____(2) No
11. Are you a member of the union or professional organization? (Check one)
- ____(1) Yes
- ____(2) No
12. Are you working full-time? (Check one)
- ____(1) Yes, I am working full-time.
- ____(2) No, I am working part-time.
13. During the past three months, have you worked any overtime? (Check one)
- ____(1) Yes, I have worked quite a bit of overtime.
- ____(2) Yes, I have worked some overtime.
- ____(3) No, I have not worked any overtime to speak of.
14. Approximately how much money have you earned during the past twelve months (Before taxes and other deductions)? (Write in) to the nearest \$1,000.
- \$ _____
15. How do you feel about the amount of money you are paying each month for any debts you may have--car, appliances, loans, house, etcetera? (Check one)
- ____(1) More than I can easily take care of on my present income.
- ____(2) About as much as I can easily handle.
- ____(3) I could owe more without any trouble.
- ____(4) I do not owe any money.
16. What is the position of your immediate supervisor? (Write in)
- _____
17. How long have you worked for your immediate supervisor? (Write in)
- ____ Years ____ Months
18. How long have you worked in your present location? (Write in)
- ____ Years ____ Months
19. How long have you been doing the job you are now on? (Write in)
- ____ Years ____ Months

YOUR JOB

20. How do you feel about the amount of responsibility you have in your job? (Check one)
- ____(1) I have too much responsibility.
- ____(2) A little too much.
- ____(3) Exactly the right amount.
- ____(4) I would like a little more.
- ____(5) I would like much more responsibility.
21. Are there other jobs that you would rather have than the one you now have? (Check one)
- ____(1) No
- ____(2) I don't know
- ____(3) Yes
22. If you had to be transferred to a different kind of job, what kind of a job would you want most to get? (Write in the job title)
- _____
23. Would you like to transfer to some other station or central in your city? (Check one)
- ____(1) No; I like my present location.
- ____(2) Yes; but there are no other locations in my city to transfer to.
- ____(3) Yes; I would like to transfer to (Where)?
- _____
24. How much say did you have in getting the assignment you are now on? (Check one)
- ____(1) I had no say at all.
- ____(2) Very little say.
- ____(3) A fair amount of say.
- ____(4) Quite a bit of say.
- ____(5) I had complete say.
25. How free do you feel to set your own work pace? (Check one)
- ____(1) I am completely free to set my own work pace.
- ____(2) I have quite a bit of freedom.
- ____(3) I have some freedom.
- ____(4) I have little freedom.
- ____(5) I have no freedom at all to set my own pace.

26. How do you feel about the layout and the equipment which you use in your daily work? (Check one for each line)

	A great many improvements are needed	Some improvements are needed	There is little room for improvements	There is no need for improvements to speak of
Design for ease of doing job	[]	[]	[]	[]
Overall efficiency	[]	[]	[]	[]
Mechanical condition	[]	[]	[]	[]
Adequacy of space	[]	[]	[]	[]
General appearance	[]	[]	[]	[]

27. On the job, do you feel any pressure for better performance over and above what you yourself think is reasonable? (Check one)

- ____ (1) I feel a great deal of pressure.
 ____ (2) Considerable pressure.
 ____ (3) Some pressure.
 ____ (4) A little pressure.
 ____ (5) I feel very little pressure.
 ____ (6) I feel no pressure at all.

28. If you feel any pressure at all, what is the main source of this pressure? (Check one)

- ____ (1) The kind of work I do.
 ____ (2) My supervisors.
 ____ (3) The people I work with.
 ____ (4) Higher management.
 ____ (5) Myself.
 ____ (6) Things off the job.
 ____ (7) Other (Write in) _____
 ____ (8) I feel no pressure at all.

29. What do the members of your family and your friends outside the company/school think of your job?
(Check one)
- ____(1) Almost all think it is a good job.
- ____(2) Most think it is a good job.
- ____(3) About half think it is a good job.
- ____(4) A few think it is a good job.
- ____(5) No one thinks it is a good job.
30. How do you feel about the way your particular tasks were assigned to you?
(Check one)
- ____(1) I am not at all satisfied.
- ____(2) I am only somewhat satisfied.
- ____(3) I am fairly well satisfied.
- ____(4) I am completely satisfied.
31. How do you feel about the part you play in your daily work? (Check one)
- ____(1) I take a great deal of pride in my part of the business.
- ____(2) I take quite a bit of pride.
- ____(3) I take some pride.
- ____(4) I take little or no pride in my part of the business.
32. How well do the people around you perform? They do:
- ____(1) An excellent job.
- ____(2) A very good job.
- ____(3) A good job.
- ____(4) A fair job.
- ____(5) A rather poor job.
- ____(6) A very poor job.
- ____(7) I don't know what kind of job they do.
33. Does your job ever make you feel nervous and "jumpy"?
(Check one)
- ____(1) Yes, fairly often.
- ____(2) Yes, occasionally.
- ____(3) Seldom.
- ____(4) Never.
- ____(5) I can't say.
34. Do you often find it difficult to sleep at night because you keep thinking of what happened at work during the day? (Check one)
- ____(1) Yes, fairly often.
- ____(2) Yes, occasionally.
- ____(3) Seldom.
- ____(4) Never.
- ____(5) I can't say.
35. How long would you like to stay in the same employ?
- ____(1) I'd like to stay until I retire.
- ____(2) I'd like to stay but I'd leave for a better job.
- ____(3) I will definitely leave as soon as I can.
- ____(4) I don't know.

36. Usually how hard do you feel that you have to work at your job?

(Check one)

- ____(1) Extremely hard,
I get tired all
the time.
- ____(2) Very hard.
- ____(3) Fairly hard.
- ____(4) Not so hard.
- ____(5) Not hard at all,
I seldom get tired
and worn out.

37. To what extent do people in different jobs in your area see eye-to-eye on things about the everyday operations of your area?

(Check one)

- ____(1) There is complete agreement.
- ____(2) A good deal of agreement.
- ____(3) Some agreement.
- ____(4) Little agreement.
- ____(5) There is no agreement.
- ____(6) I can't tell.

38. Sometimes it is necessary for some people to work extra hours--more hours than the regular work week. What are your feelings about the extra hours you have worked during the past few months?

(Check one)

- ____(1) I have not worked extra hours.
- ____(2) I have not had enough.

- ____(3) I have had about the right amount of extra hours.

- ____(4) I have had to work too many extra hours.

39. How well do you understand the way the standards are set for your job? (Check one)

- ____(1) I understand completely how they are set up.

- ____(2) I have a good understanding.

- ____(3) I understand some things about them.

- ____(4) I understand very little.

- ____(5) There are no standards or time schedules for my job.

40. How do you feel about the standards for your job? (Check one)

- ____(1) They are very fair.

- ____(2) They are about right.

- ____(3) They could be better.

- ____(4) They are unfair.

- ____(5) There are no standards or time schedules for my job.

41. Sometimes the program with which you are concerned is changed. How often are you consulted by the innovators of this change? (Check one)
- ___(1) The innovators take into account my views very often.
- ___(2) Fairly often.
- ___(3) Not so often.
- ___(4) The person changing a program does not take into account my views at all.
- ___(5) There are no changes.
- ___(6) I can't judge.
42. In general what do you think of your opportunities to remain effective when you have an increased load?
- ___(1) Excellent
- ___(2) Good
- ___(3) Fair
- ___(4) Poor
- ___(5) Very poor
- WAGES AND PROMOTIONS
43. How satisfied are you with your present salary?
- ___(1) Completely satisfied.
- ___(2) Very well satisfied.
- ___(3) Fairly satisfied.
- ___(4) Very little satisfied.
- ___(5) Not at all satisfied.
44. How satisfied are you with your chances for advancement? (Check one)
- ___(1) Not at all satisfied.
- ___(2) Very little satisfied.
- ___(3) Fairly satisfied.
- ___(4) Very well satisfied.
- ___(5) Completely satisfied.
45. If you were offered a supervisory job, would you take it? (Check one)
- ___(1) Definitely I would.
- ___(2) I probably would.
- ___(3) I don't know.
- ___(4) I probably would not take it.
- ___(5) Definitely, I wouldn't.
46. Ordinarily, under what wage payment plan are you paid? (Check one)
- ___(1) Straight time and overtime.
- ___(2) Individual incentive or bonus.
- ___(3) Group incentive or bonus.
- ___(4) Any other plan or any combination of the above.
- ___(5) Salary.

47. How does your place of employ compare with other companies as a place to work? (Check one)

- ☐ (1) Much better than most.
☐ (2) Better than most.
☐ (3) About the same as most.
☐ (4) Somewhat poorer than most.
☐ (5) Much poorer than most.

48. How do you feel about further growth and expansion? (Check one)

- ☐ (1) I hope the system (corporation) expands a great deal.
☐ (2) I hope the system (corporation) expands somewhat.
☐ (3) I hope the system (corporation) stays about the same.
☐ (4) I think the system (corporation) is getting too big.
☐ (5) I don't care much one way or the other.

49. In general, how much say or influence do you feel each of the following groups has on what goes on in your sphere of influence? (Check one for each line)

	Little or no Influence	Some Influence	Quite a Bit of Influence	A Great Deal of Influence	A Very Great Deal of Influence
School Board					
Top Level Management	[]	[]	[]	[]	[]
Area Manager					
Central Administration	[]	[]	[]	[]	[]
School Principal					
Office Management	[]	[]	[]	[]	[]
Principal Supervisor					
Department Heads	[]	[]	[]	[]	[]
Immediate Peers	[]	[]	[]	[]	[]
Your Professional Organization or Bargaining Committee	[]	[]	[]	[]	[]

50. In general, how much say or influence do you think each of the following groups should have on what goes on in your POSITION? (Check one for each line)

	Little or no Influence	Some Influence	Quite a Bit of Influence	A Great Deal of Influence	A Very Great Deal of Influence
School Board Top Level Management	[]	[]	[]	[]	[]
Area Manager Central Administration	[]	[]	[]	[]	[]
School Principal Office Management	[]	[]	[]	[]	[]
Principal Supervisor Department Head	[]	[]	[]	[]	[]
Immediate Peers	[]	[]	[]	[]	[]
Your professional Organization or Bargaining Committee	[]	[]	[]	[]	[]

51. How satisfied are you with the recognition you have received for your own work? (Check one)

- ____ (1) Completely satisfied.
 ____ (2) Very satisfied.
 ____ (3) Fairly satisfied.
 ____ (4) Little satisfied.
 ____ (5) Not at all satisfied.

52. To what extent do you feel that your company/school system is interested in the welfare of the employees? (Check one)

- ____ (1) The company-school system is very much interested.
 ____ (2) Quite a bit interested.
 ____ (3) Fairly interested.
 ____ (4) Slightly interested.
 ____ (5) The company is not at all interested.

53. In general, how much say or influence does the highest level of management/administration have on what the following groups do in the company-schools?

	Little or no Influence	Some Influence	Quite a Bit of Influence	A Great Deal of Influence	A Very Great Deal of Influence
School Board					
Top Level Management	[]	[]	[]	[]	[]
Area Manager					
Central Administration	[]	[]	[]	[]	[]
School Principal					
Office Management	[]	[]	[]	[]	[]
Principal Supervisor					
Department Heads	[]	[]	[]	[]	[]
Immediate Peers	[]	[]	[]	[]	[]
Your professional Organization or Bargaining Committee	[]	[]	[]	[]	[]

SUPERVISION

Most of the questions in this section refer to your immediate supervisor. Some questions, however, refer specifically to your principal or manager, if he is a different person.

54. How good is your immediate supervisor in dealing with people? (Check one)

- ___(1) He does an excellent job.
- ___(2) A very good job.
- ___(3) A good job.
- ___(4) A fairly good job.
- ___(5) A fairly poor job.
- ___(6) A poor job.

55. Do you feel that your immediate supervisor will go to bat or stand up for you? (Check one)

- ___(1) No, he definitely won't.
- ___(2) He probably won't.
- ___(3) He may or may not.
- ___(4) He probably will.
- ___(5) Yes, he definitely will.

56. Does your immediate supervisor have enough authority to decide on his own the things he should decide? (Check one)
- ___(1) Yes, he has more authority than he needs.
- ___(2) Yes, he has enough authority to do his job.
- ___(3) He has enough authority for some things and not for others.
- ___(4) No, he does not have enough authority.
- ___(5) I don't know.
57. How free do you feel to discuss your personal problems with your immediate supervisor? (Check one)
- ___(1) Not at all free.
- ___(2) Not very free.
- ___(3) Fairly free.
- ___(4) Very free.
58. How well do you know what your immediate supervisor thinks of your work? (Check one)
- ___(1) I know very definitely what he thinks of my work.
- ___(2) I have a good idea.
- ___(3) I have some idea.
- ___(4) I am not sure what he thinks of my work.
- ___(5) I have very little idea of what he thinks of my work.
59. How good is your immediate supervisor in planning, organizing, and scheduling work ahead of time? (Check one)
- ___(1) Excellent
- ___(2) Very good.
- ___(3) Fairly good.
- ___(4) Fairly poor.
- ___(5) Very poor.
60. How do you feel about what your immediate supervisor expects you to do? (Check one)
- ___(1) What he expects is far too much.
- ___(2) What he expects is a little too much.
- ___(3) What he expects is exactly right.
- ___(4) What he expects is not really very much.
- ___(5) I don't know what he expects; I am completely on my own.
61. To what extent do you feel that you can influence the activities and decisions of your immediate supervisor? (Check one)
- ___(1) To a very great extent.
- ___(2) To a considerable extent.
- ___(3) To some extent.
- ___(4) To a very little extent.
- ___(5) Not at all.

62. Does your immediate supervisor ask your opinion when a problem comes up that involves your work? (Check one)
- ____(1) He always asks my opinion.
- ____(2) Often asks.
- ____(3) Sometimes asks.
- ____(4) Seldom asks.
- ____(5) He never asks my opinion.
63. To what extent is your immediate supervisor interested in the welfare of his subordinates? (Check one)
- ____(1) He is very much interested.
- ____(2) Quite a bit interested.
- ____(3) Fairly interested.
- ____(4) Slightly interested.
- ____(5) He is not at all interested.
64. Taking all things into consideration, how satisfied are you with your immediate supervisor? (Check one)
- ____(1) I am completely satisfied.
- ____(2) I am very satisfied.
- ____(3) I am fairly satisfied.
- ____(4) I am somewhat dissatisfied.
- ____(5) I am very dissatisfied.
65. In general, how much say or influence does your manager/principal, vice-principal have on what the following groups do in the company/school?

	Little or no Influence	Some Influence	Quite a Bit of Influence	A Great Deal of Influence	A Very Great Deal of Influence
School Board					
Top Level Management	[]	[]	[]	[]	[]
Area Manager					
Central Administration	[]	[]	[]	[]	[]
School Principal					
Office Management	[]	[]	[]	[]	[]
Principal Supervisor					
Department Heads	[]	[]	[]	[]	[]
Immediate Peers	[]	[]	[]	[]	[]
Your Professional Organization or Bargaining Committee	[]	[]	[]	[]	[]

If your manager/principal is a different person from your immediate supervisor, then answer the following questions:

66. How good is your manager/principal with people?
(Check one)

- ☐ (1) He does an excellent job.
- ☐ (2) A very good job.
- ☐ (3) A fairly good job.
- ☐ (4) A fairly poor job.
- ☐ (5) A poor job.

67. To what extent do you feel that you can influence the activities and decisions of your manager/principal?
(Check one)

- ☐ (1) To a very great extent.
- ☐ (2) To a considerable extent.
- ☐ (3) To some extent.
- ☐ (4) To a very little extent.
- ☐ (5) Not at all.

68. How do you feel about what your manager/principal expects you to do?
(Check one)

- ☐ (1) What he expects is far too much.
- ☐ (2) A little too much.
- ☐ (3) Exactly right.
- ☐ (4) Not really very much.
- ☐ (5) I don't know what he expects. I am completely on my own.

69. How do the supervisors in your office/school feel about the professional organization?

- ☐ (1) They are all favorable.
- ☐ (2) Most of them are favorable.
- ☐ (3) About half of them are favorable.
- ☐ (4) A few are favorable.
- ☐ (5) None of them is favorable.

70. To what extent do you have confidence and trust in the supervisors in your area?
(Check one)

- ☐ (1) To a very great extent.
- ☐ (2) To a considerable extent.
- ☐ (3) To some extent.
- ☐ (4) To a very little extent.
- ☐ (5) I don't trust them at all.

71. Are there any group meetings in which the people you work with can discuss things with the supervisors? (Check one)

- ☐ (1) Yes, and they are always worth while.
- ☐ (2) Yes, and they are usually worth while.
- ☐ (3) Yes, but usually nothing much is accomplished.
- ☐ (4) Yes, but they are just a waste of time.
- ☐ (5) No, we never have such group meetings.

72. In general, how much say or influence does the top management/senior administrator in your city have on what the following groups do in the company? (Check one for each line)

	Little or no Influence	Some Influence	Quite a Bit of Influence	A Great Deal of Influence	A Very Great Deal of Influence
School Board Top Level Management	[]	[]	[]	[]	[]
Area Manager Central Administration	[]	[]	[]	[]	[]
School Principal Office Management	[]	[]	[]	[]	[]
Principal Supervisor Department Heads	[]	[]	[]	[]	[]
Immediate Peers	[]	[]	[]	[]	[]
Your Professional Organization or Bargaining Committee	[]	[]	[]	[]	[]

73. On the whole, how well is your school department/department run?
(Check one)

____(1) Excellent	____(3) Good	____(5) Very Poor
____(2) Fair	____(4) Poor	

74. In general, how much say or influence do the supervisors/department heads have on what the following groups do in the company? (Check one for each line)

	Little or no Influence	Some Influence	Quite A Bit of Influence	A Great Deal of Influence	A Very Great Deal of Influence
School Board Top Level Management	[]	[]	[]	[]	[]
Area Manager Central Administration	[]	[]	[]	[]	[]
School Principal Office Management	[]	[]	[]	[]	[]
Principal Supervisor Department Heads	[]	[]	[]	[]	[]
Immediate Peers	[]	[]	[]	[]	[]
Your Professional Organization or Bargaining Committee	[]	[]	[]	[]	[]

75. How do the men you work with compare with other groups that do the same kind of work when it comes to sticking together and helping each other out?

- ____ (1) One of the poorest groups at sticking together and helping each other.
 ____ (2) Not as good as most.
 ____ (3) About the same as most.
 ____ (4) Better than most.
 ____ (5) One of the best groups at sticking together and helping each other.

76. Comparing the people you work with and people in other stations doing the same kind of work, how does your group compare in getting the job done?

- ____ (1) Among the very best groups.
 ____ (2) Better than most other groups.
 ____ (3) About the same as most other groups.
 ____ (4) Somewhat poorer than most other groups.
 ____ (5) Among the poorest groups.

77. How strong a "sense of belonging" do you feel you have to the following groups? How much do you really "feel a part" of each group? (Check one for each line)

	Little or no sense of Belonging	Some Sense of Belonging	Strong Sense of Belonging
Teaching			
Your job in Industry	[]	[]	[]
School Board			
The Senior Company	[]	[]	[]
Where You Work	[]	[]	[]
The People I Work With	[]	[]	[]
Professional Organization Association	[]	[]	[]
Bargaining Agent	[]	[]	[]

78. How do you feel about the "morale" in your situation?
(Check one)

- ____ (1) The morale is excellent.
 ____ (2) The morale is good.
 ____ (3) The morale is fair.
 ____ (4) The morale is poor.
 ____ (5) The morale is very poor.

____ (5) It is among the poorest situation.

80. If you were unhappy and had grievance or complaint, to whom would you take it first?

- ____ (1) The people I work with.
 ____ (2) My supervisor.
 ____ (3) My manager (if different from supervisor).
 ____ (4) A.T.A. representative.
 ____ (5) Other (write in) _____

79. How do you feel your place of work compares with other similar situations in getting the job done?
(Check one)

- ____ (1) My situation is among the very best.
 ____ (2) Better than most.
 ____ (3) About the same as most.
 ____ (4) Somewhat poorer than most.

81. Do you feel that the replacements or substitutes hired are made to feel a part of the group? (Check one)

- ☐ (1) Most of the regular employees do their best to make extra employees feel a part of the group.
- ☐ (2) Some of the regular employees do their best to make extra employees feel a part of the group.
- ☐ (3) Few of the regular employees do their best to make extra employees feel a part of the group.
- ☐ (4) Practically none of the regular employees does his best to make extra employees feel a part of the group.
- ☐ (5) I can't judge.

82. Thinking only of the men in your situation who do the same kind of work as yourself, how much do they agree in their opinions and beliefs about the company and the job?

- ☐ (1) There is no agreement.
- ☐ (2) Little agreement.
- ☐ (3) Some agreement.
- ☐ (4) A good deal of agreement.
- ☐ (5) There is complete agreement.

83. Suppose one of the people you work with is extremely competent. What sort of a person do you think he might be? (Check three of the things listed below)

He is probably a person who:

- ☐ (1) Is trying to get along well with his immediate supervisor.
- ☐ (2) Feels money is the most important thing.
- ☐ (3) Is cutting down on the quality of his work.
- ☐ (4) Has more ability than most other people for doing that job.
- ☐ (5) Wants to get ahead in the company/school system.
- ☐ (6) Is in a position with an easy standard.
- ☐ (7) Is putting out extreme effort.
- ☐ (8) Is not sticking exactly to the usual methods.
- ☐ (9) Does not care how he gets along with the people he works with.
- ☐ (10) Takes real pride in doing a good days work.

84. Suppose one of the people you work with does not appear to be competent. What sort of person do you think he might be?
(Check three of the things listed below)

He probably is a person who:

- ☐ (1) Feels that money is not the most important thing.
- ☐ (2) Does not care how he gets along with his immediate supervisor.
- ☐ (3) Is very interested in keeping up the quality of his work.
- ☐ (4) Has less ability than most people for doing that job.
- ☐ (5) Does not care about getting ahead in the company.
- ☐ (6) Is on a job with a difficult standard.
- ☐ (7) Is not putting out much effort.
- ☐ (8) Thinks his low productivity will help him get his standard changed.
- ☐ (9) Is trying to get along well with the people he works with.
- ☐ (10) Does not take pride in turning out a good days work.

For the Following Questions, You Are Asked About the Feelings and
Ideas of the People You Work With

- | | |
|---|---|
| <p>85. In general, how do your peers think the management of your bargaining committee or employees association get along together? (Check one)</p> <ul style="list-style-type: none"> <input type="checkbox"/> (1) Very well. <input type="checkbox"/> (2) Fairly well. <input type="checkbox"/> (3) They get along all right. <input type="checkbox"/> (4) Fairly poorly. <input type="checkbox"/> (5) Very poorly. <input type="checkbox"/> (6) I don't know how they think. | <p>86. How do the men in your immediate vicinity feel about the "morale" in your situation? (Check one)</p> <ul style="list-style-type: none"> <input type="checkbox"/> (1) They feel that the morale is excellent. <input type="checkbox"/> (2) They feel that the morale is good. <input type="checkbox"/> (3) They feel that the morale is fair. <input type="checkbox"/> (4) They feel that the morale is poor. <input type="checkbox"/> (5) They feel that the morale is very poor. <input type="checkbox"/> (6) I don't know how they feel. |
|---|---|

87. How do the people in your office/school feel about how your office/school compares with other similar schools or offices in getting the job done? (Check one)

- ___(1) The school/office is among the very best.
- ___(2) Better than most.
- ___(3) About the same as most.
- ___(4) Somewhat poorer than most.
- ___(5) It is among the poorest schools/offices.
- ___(6) I don't know how they feel about this.

88. How do the men in your office/school feel about how your office/school is run? (Check one)

- ___(1) Excellent
- ___(2) Good
- ___(3) Fair
- ___(4) Poor
- ___(5) Very poor
- ___(6) I don't know how they feel.

89. Do the men in your office/school have an accurate picture about what is going on in your office area/school? (Check one)

- ___(1) They have a completely accurate picture; they understand everything.
- ___(2) A very accurate picture; they understand most things.

___(3) A fairly accurate picture; they understand some things but not others.

___(4) Not so accurate a picture; there are a great many things they don't understand.

___(5) They have a very poor picture; they really understand very little of what is going on.

___(6) I can't tell.

90. How do the men who work for your immediate supervisor feel about how strict he is?

___(1) They feel that he is unnecessarily strict.

___(2) They feel that he is fairly strict.

___(3) They think that he is only slightly strict.

___(4) They feel that he is not strict at all.

___(5) I don't know how they feel.

91. How do the men in your area feel about the school/office as a place to work? (Check one)

___(1) They feel that it is much better than most other companies/school systems.

___(2) Better than most.

___(3) About the same as most.

___(4) Somewhat poorer than most.

___(5) They feel it is much poorer than most.

___(6) I don't know how they feel.

92. In general, how much say or influence do the men in your office/school have on what the following groups do in the company/school? (Check one)
- (a) On what the higher management/central administration of the company/school itself does:
- ___(1) Little or no influence.
- ___(2) Some influence.
- ___(3) Quite a bit of influence.
- ___(4) A great deal of influence.
- ___(5) A very great deal of influence.
- (b) On what the top management/principal of your school/company does:
- ___(1) Little or no influence.
- ___(2) Some influence.
- ___(3) Quite a bit of influence.
- ___(4) A great deal of influence.
- ___(5) A very great deal of influence.
- (c) On what your department head/station manager does:
- ___(1) Little or no influence.
- ___(2) Some influence.
- ___(3) Quite a bit of influence.
- ___(4) A great deal of influence.
- ___(5) A very great deal of influence.
- (d) On what the other supervisors in your school/office do:
- ___(1) Little or no influence.
- ___(2) Some influence.
- ___(3) Quite a bit of influence.
- ___(4) A great deal of influence.
- ___(5) A very great deal of influence.
- (e) On what the men in your area themselves do:
- ___(1) Little or no influence.
- ___(2) Some influence.
- ___(3) Quite a bit of influence.
- ___(4) A great deal of influence.
- ___(5) A very great deal of influence.

COMMUNICATIONS

93. How do you feel about innovation here?
(Check one)
- ___(1) Very worthwhile.
___(2) Fairly worthwhile.
___(3) Of little worth.
___(4) Of no value at all.
___(5) Never see it.
94. How well do you think top level management/central administration understand the teachers/workers viewpoint? (Check one)
- ___(1) They have a complete understanding.
___(2) Very good understanding.
___(3) Fairly good understanding.
___(4) Little understanding.
___(5) No understanding of how employees think and feel.
___(6) I don't have any idea.
95. If you have a suggestion for improving the job or changing the setup in some way, how easy is it for you to get your ideas across to management/administration?
- ___(1) It is very difficult to get my ideas across.
___(2) Somewhat difficult.
___(3) Not too easy.
- ___(4) Fairly easy.
___(5) It is very easy to get my ideas across.
___(6) I have never had a suggestion for improving the job.
96. In general, do you feel that you are told all you need to know in order to do your job in the best possible way?
- ___(1) I get more information than is necessary.
___(2) I get as much as I need.
___(3) I get less than is necessary.
___(4) I don't get nearly enough information.
97. Do you feel that you have an accurate picture about what is going on in your area--school/office? (Check one)
- ___(1) I have a completely accurate picture; I understand everything that is going on.
___(2) A very accurate picture; I understand most things.
___(3) A fairly accurate picture; I understand some things but not others.
___(4) Not so accurate a picture; there are a great many things I don't understand.
___(5) I have a very poor picture; I really understand very little of what is going on.

SOME OF YOUR OPINIONS AND BELIEFS

In this section, we would like to ask questions on some of your ideas about things in general. You are asked to show by a check (✓) how much you agree or disagree with each of the following statements:

- | | |
|--|---|
| <p>98. Nowadays many people spend too much money on pleasure and recreation. (Check one)</p> <p>___(1) Strongly agree.</p> <p>___(2) Agree.</p> <p>___(3) I can't make up my mind.</p> <p>___(4) Disagree.</p> <p>___(5) Strongly disagree.</p> <p>___(6) No opinion.</p> | <p>101. In days like these, people like me <u>can't really</u> understand what is going on in the world. (Check one)</p> <p>___(1) Strongly agree.</p> <p>___(2) Agree.</p> <p>___(3) I can't make up my mind.</p> <p>___(4) Disagree.</p> <p>___(5) Strongly disagree.</p> <p>___(6) No opinion.</p> |
| <p>99. If something goes wrong, the <u>first thing</u> to do is to ask yourself if it was your own fault. (Check one)</p> <p>___(1) Strongly agree.</p> <p>___(2) Agree.</p> <p>___(3) I can't make up my mind.</p> <p>___(4) Disagree.</p> <p>___(5) Strongly disagree.</p> <p>___(6) No opinion.</p> | <p>102. Nowadays people <u>are not willing</u> to work as hard as they used to. (Check one)</p> <p>___(1) Strongly agree.</p> <p>___(2) Agree.</p> <p>___(3) Can't make up my mind.</p> <p>___(4) Disagree.</p> <p>___(5) Strongly disagree.</p> <p>___(6) No opinion.</p> |
| <p>100. The main question to be asked <u>about any decision</u> is, "How much does it cost?" (Check one)</p> <p>___(1) Strongly disagree.</p> <p>___(2) Disagree.</p> <p>___(3) I can't make up my mind.</p> <p>___(4) Agree.</p> <p>___(5) Strongly agree.</p> <p>___(6) No opinion.</p> | <p>103. Obedience and respect for authority are <u>the most important</u> virtues children learn. (Check one)</p> <p>___(1) Strongly disagree.</p> <p>___(2) Disagree.</p> <p>___(3) Can't make up my mind.</p> <p>___(4) Agree.</p> <p>___(5) Strongly agree.</p> <p>___(6) No opinion.</p> |

CHANGES IN YOUR FIRM/SCHOOL SYSTEM

104. Considering the changes that have taken place in your function while you have worked here, how much change do you expect during the next couple of years?

- ☐ (1) There are likely to be many important changes in the area.
- ☐ (2) There are likely to be some important changes.
- ☐ (3) There are likely to be few important changes.
- ☐ (4) There are likely to be no important changes at all in the station.

105. From time to time changes in methods, equipment, procedures, practices and layout are introduced by the management/administration. In general, do you think these changes lead to better ways of doing things? (Check one)

- ☐ (1) They are always an improvement.
- ☐ (2) Most of the time they are an improvement.
- ☐ (3) Sometimes they are an improvement.
- ☐ (4) They seldom are an improvement.
- ☐ (5) They never improve things.
- ☐ (6) I can't judge.

106. How do the men in your function feel about these same changes? (Check one)

- ☐ (1) Almost everyone thinks that these changes improve things.
- ☐ (2) Most think that things improve.
- ☐ (3) About half think that things improve.
- ☐ (4) Only a few think that things improve.
- ☐ (5) No one thinks that things improve.
- ☐ (6) I don't know how they feel.

107. In the past few years various changes have taken place in the school/company. Do you feel that there has been any change in the following? (Check one for each line)

	A Great Deal of Change for the Better	Considerable Change for the Better	Some Change for the Better	Little or no Change	Change for the Worse
How well the company/school is run.	[]	[]	[]	[]	[]
How interested the company is in the employees.	[]	[]	[]	[]	[]
How good a job the supervisors do.	[]	[]	[]	[]	[]
How good a job the men do.	[]	[]	[]	[]	[]
The <u>quality</u> of the service to the people you deal with.	[]	[]	[]	[]	[]
The <u>efficiency</u> and costs of the service to the people you deal with.	[]	[]	[]	[]	[]

A FINAL WORD

This has been a long questionnaire and we want to thank you for your cooperation in filling it out. We would like your answers to just two more questions.

FIRST: How frankly have you answered the questions? (Check one)

___(1) I answered all of them as frankly as I could.

___(2) Most of them.

___(3) About half of them.

___(4) I answered less than half of them frankly.

SECOND: This questionnaire may have missed some of the important things about the way you see your place of employment. If you have any additional points or ideas which you think we should know about, please write in these things in the space below and on the back page.

PLEASE CHECK BACK THROUGH THE QUESTIONS TO BE

SURE THAT YOU HAVE ANSWERED THEM ALL

THANK YOU VERY MUCH

APPENDIX D

Name: Mr. D. F. Jones
 Project: _____
 Date: _____
 Card: No. 1

CARD CODE KEY

Var #	Column	Variable	Var #	Column	Variable
	1			41	Lay & Equip. #5 Part
	2	Years employed in mos.		42	Pressure on job
	3	Time start work		43	Source of pressure
	4	Age in years		44	Family, friends think
	5			45	of job
	6			46	Way task assigned
	7			47	Part played in work
	8	Your job		48	People around perform
	9	Have another job		49	Job--nervous etcetera
	10	Education		50	Difficult to sleep
	11	Marital Status		51	How long stay in job
	12	Wife work		52	How hard work
	13	Dependents		53	See eye-to-eye others
	14	Own home		54	Extra hours
	15	Member union, prof.organ		55	Understand standards
	16	Employed full time		56	Feel about standards
	17	Working overtime		57	How often consulted
	18			58	Opport.rem. eff. load
	19	Salary to nearest \$1000		59	Satis. present salary
	20	Debt		60	Chances advancement
	21	Job title and imm. sup.		61	Would take sup. job.
	22			62	How paid
	23	Years of work (in mos.)		63	Place of work compare
	24	For same supervisor		64	Further growth & expan.
	25	Years of work (in mos.)		65	Influence Part #1
	26	in present location		66	on #2
	27	Years in mos. on type		67	You #3
	28	of work now doing		68	#4
	29			69	#5
	30	Responsibility		70	#6
	31	Jobs would rather have		71	Influence Part #1
	32	Title of job would		72	should #2
	33	wish for		73	have
	34	Transfer		74	
	35	Say in job		75	Satisfied recognition
	36	Freedom to set pace		76	Company interested
	37	Layout #1 Part		77	in employees
	38	and #2 Part		78	I.D.
	39	Equip- #3 Part		79	I.D.
	40	ment #4 Part		80	Card No.

Name: Mr. D. F. Jones
 Project: _____
 Date: _____
 Card: No. 2

CARD CODE KEY

Var #	Column	Variable	Var #	Column	Variable
	1	Influence Part #1		41	Part #5
	2	highest #2		42	#6
	3	level #3		43	Men help each other
	4	#4		44	Group gets job done
	5	#5		45	Part #1
	6	#6		46	Sense #2
	7	Imm.sup/people		47	of #3
	8	Sup.stand up for you		48	Belonging #4
	9	Sup.enough authority		49	#5
	10	Freedom discuss prob.		50	#6
	11	Sup. as planner		51	Morale
	12	Sup. expects		52	Getting job done
	13	Your influence on sup.		53	Grievance
	14	Sup. ask opinion		54	Substitute acceptance
	15	Sup.interested your welf.		55	Agreement about comp.&job
	16	Satisfaction with sup.		56	Competence #1
	17	Part #1		57	#2
	18	Influence #2		58	#3
	19	of #3		59	Non- #1
	20	Manager/ #4		60	Competence #2
	21	Principal #5		61	#3
	22	#6		62	Peers bargaining agent or
	23	Manager with people		63	professional organization
	24	Your influence on manager		64	Peers feel about morale
	25	Manager expectation		65	Peers feel " completing job
	26	Sup.feel prof.org.		66	Men feel school (office run
	27	Confidence in sup.		67	Men accurage pict. surround
	28	Discussion meet.with sup.		68	Men/strictness of sup.
	29	Part #1		69	Feel about place of work
	30	Influence #2		70	Part #1
	31	of #3		71	Influence #2
	32	Top #4		72	of #3
	33	Adminis. #5		73	Men #4
	34	#6		74	#5
	35	How well run/Dept.		75	Men feel about innovation
	36	Influence Part #1		76	Administrator understand
	37	of #2		77	
	38	Sup. Dept. #3		78	I.D.
	39	Heads #4		79	I.D.
	40	Sup. thinks your work		80	Card No.

Name: Mr. D. F. Jones
 Project: _____
 Date: _____
 Card: No. 3

CARD CODE KEY

Var #	Column		Var #	Column	
	1	How easy to make sugges-		41	
	2	tions to supervisor		42	
	3	Do you know all you		43	
	4	need to know		44	
	5	Have an accurate picture		45	
	6	Too much money spent		46	
	7	Error--your fault		47	
	8	Cost		48	
	9	No understanding		49	
	10	People not willing to		50	
	11	work		51	
	12	Virtues of children		52	
	13	Expect change		53	
	14	Does change lead to		54	
	15	better		55	
	16	Men feel about changes		56	
	17	Any Part #1		57	
	18	Change #2		58	
	19	#3		59	
	20	#4		60	
	21	#5		61	
	22	#6		62	
	23	Frankness		63	
	24			64	
	25			65	
	26			66	
	27			67	
	28			68	
	29			69	
	30			70	
	31			71	
	32			72	
	33			73	
	34			74	
	35			75	
	36			76	
	37			77	
	38			78	
	39			79	
	40			80	

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